VOLUME 24 NOVEMBER, 1918 NUMBER 299

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PERCIVAL SHELDON RIDSDALE, Editor

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**DOUGLAS FIR—MONARCH OF THE WOODS**

**This vast resource of the West is practically untouched. It is the wood *par excellence* for airplane stock and is valiantly doing its bit in winning the war. A raft of logs recently cut in Oregon, consisting of 210 sticks, totaled one million feet board measure.**

*Photograph by McKenzie, Duluth*

AFTER THE FIRE DEMON PASSED

"It did not smoulder, crawl and creep as ordinary fires do, but with one great bound it clutched its prey in instant flames." The picture shows the wreck of a home—all that was not metal burned; and, above, a swamp, almost a peat bog, that will burn and smoulder probably for weeks.

AMERICAN FORESTRY

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# THE HOLOCAUST IN MINNESOTA

## A GREATER HINCKLEY

BY E. G. CHEYNEY

THE afternoon of October 12, 1918, differed but little from many another afternoon that Cloquet had seen in years gone by and her busy life pulsed on with normal beat. Her five great sawmills hummed and coughed as was their wont, the toothpick factory turned out its accustomed thousands of surgeon's paddles, the planers whined plaintively, the endless stream of pulpwood went its jerky way down the long conveyor into the paper mill, and 150 million feet of lumber in high, neat piles lay drying in the two miles of valley at the foot of the prosperous town.

To be sure the wind was rising steadily, but what of that? Let sailors cast their eyes aloft and trim their sails with cautious care, it mattered not to men with solid ground beneath their feet. It was dry? Yes, twenty inches short of rain in twenty months, but the fire ranger was an able man and surely he could handle the little tract of 107 townships that were his to watch alone. Wind and smoke had come and gone before and no one been the worse for it.

So, "On with the dance." Why worry over things that are none of one's business?

Better had the land lubbers heeded the wind and not rested so contemptously secure in their fancied safety. Far away to the west and north that very wind was preparing some weird rites ordained to recover its lost prestige. Persistently it whispered to many a little bunch of coals left smoldering in some lakeside swamps

*Photograph by Underwood and Underwood*

NOT WHAT IT SEEMS TO BE AT ALL

This is not a reconstruction committee visiting a scene of devastation left by the vandal Hun, but it shows all that is left of the Country Club of the Golf Association of Duluth after the terrific fire had swept on.

by the hunters, to little blazes wavering up from careless matches, and to clearing fires insanely set at such a time. They might have been harmless enough without the drouth and of little power without the wind, but the stage was set for greater things by a master hand.

The devil dance was on.

Quickly those little fires responded to that seductive wind. Through dust dry swamp and swirling autumn leaves they crept with eager pace, till urged on to madness by the ever more furious wind they joined hands in the St. Louis Valley near Floodwood in one wild burst of flame. The devil dance was on indeed.

The Cloquet mills coughed and shrieked. Duluth lay secure in her civic might and Moose Lake cared little for a fire in the distant woods.

But the ore trains were blocked on the Great Northern tracks, a matter of international importance at the present time, and the first word of warning was sounded in Cloquet. It was not a very loud warning and no one heeded it much. Then a train of refugees went through from Brevator on their way to Superior. The warning was a little louder now and the wise ones began to prick up their ears. The mills coughed on. Brevator was a long way off. But the wise ones arranged for an open track to Superior and held relief trains in readiness. The people smiled indulgently and coupled up the garden hose. So quickly do the memories of former disasters pass away that the destruction of a large town by a forest fire seemed to them incredible.

The smoke had become so dense that neighbor bumped into neighbor on the street and yet the mill ran on. But at last the wise ones were convinced. For the first time in fifteen years the great steam siren shrieked its frightful call of impending disaster and the authorities began herding the unbelieving people onto the cars. No pullmans, these cars. A few coaches, baggage cars, box cars, coal cars of almost every type, but they could carry people; and they did. Reluctantly and often protesting the people clambered on. There was no panic and no confusion. Fear there probably was before the three trains pulled out, but if so it was well contained and no one disgraced himself.

In the meanwhile it happened. With one mighty bound, a massive, solid wall of flame shot over the hill at the west end of the lumberyards and all hope of saving the town was gone. It did not smoulder, crawl and leap by turns as ordinary fires do. With one great bound it clutched its prey in instant flames. A dozen blazing centres had sprung up at once. Furiously the fires raged. But even so it could not stampede that last waiting train of hope. When the flames began lapping over the rear cars, the train moved slowly ahead till free of the flames, and waited. The flames forced it to move again and again it waited. There were to

*Photograph by Underwood and Underwood*

RUIN NEAR THE SUBURBS OF DULUTH

"All unheralded, the fire descended on the far-flung suburbs of Duluth. A night raid from the forest on a mighty city. Two hundred deaths tell the horrible story." This is all that remains of a farm home, twelve miles west of the city.

be no abandoned souls in that town driven to madness by the sight of a departing train. Eight thousand people taken out of town in one short hour, and only seven lost. Seven who were lost in the smoke or refused to leave and never reached the tracks at all. It was a wonderful record.

Nor was the reception in Superior less wonderful. Superior might well be proud. Twelve thousand refugees welcomed, housed and fed in twelve hours.

The few brave spirits who went back the next day to learn the fate of the town must have stood in silent awe of what they saw. Nothing! Hardly a trace of the thriving city that had hummed with normal life the day sniffed at each new comer, and disappointed trotted on to try again. Hardly a sound in this ghost of a noisy city, even the footsteps seemed to lose their sound in that awful emptiness. Where row after row of lumber piles had stood the ground was smooth and clean, swept bare by that sixty-mile an hour wind.

As though to display its power of wilful destruction, the flames by strange caprice had skipped some spots as though by a miracle. The public library with its heavy walls of brick had faced the lumberyard. The last vestige of the lumber piles was gone. The back portion of the building was gone. Only some ten feet of the front wall remained. And yet on the two ornamental

*Photograph by McKenzie, Duluth*

DESTRUCTION SWIFT AND COMPLETE

This is the site of an inn, where many a merry party has foregathered. Now only blackened ruins and charred stumps remain to tell the story of flame and terror.

before. Block after block there was not a thing in sight above the foundation lines. Chimneys, framework, everything gone. Mere blackened stubs where large crowned trees had been. Brick buildings level with the ground. And round, about, and through it all paved streets and curbing. Indeed had it not been for these paved streets with many a familiar crook and turn the searcher could not have found his way about, so completely had the buildings disappeared.

Here and there the wreck of an abandoned automobile leaned drunkenly against the curb. A few stray dogs lamp posts on the front steps were to round glass globes uncracked, while up and down the curb was spattered lead which had melted from the insulated telephone cables overhead.

Far up on the hill where the fire had wiped away whole blocks of houses as if by magic stood a lonely house. Its neighbors on the four adjoining lots had disappeared, only the charred foundations left. Not a pane of glass was cracked, not a thing was burned. Three houses on the eastern edge of town and four on the west shared with it the glory of survival in that

great inferno. Two of the sawmills were there in tact, the paper mill, the box factory and some of the lumber piles. The town was gone. The leaves on the willows in the park were green and unshriveled. Every house around it was in dust and the dust had blown away.

A bunch of nickels in a cash drawer had fused into a solid lump. Two bicycles lying where a shed had been were welded into a single tangled mass. Whole sections of copper wire had been burned away. The grass in some of the yards was unscorched.

Never was there such complete destruction of a good sized modern town accompanied by so little loss of life. Three days after the fire reconstruction had commenced. So thankful were the people for their own escape that scarcely a voice was heard to bemoan the loss of property, as complete and thorough as it well could be. Such the astounding story of Cloquet, and pity it is that others could not have been as fortunate. The death song of Moose Lake must be written in another minor key.

*Photograph by McKenzie, Duluth*

INSPECTING THE RUINS

This was once a beautiful home near Duluth, in Lakeview district.

The devil dance was not confined to the St. Louis Valley. A branch of it shot across the swamps to the southeast and closed in on the illstarred town of Moose Lake. They laughed at such warnings as they had. No relief trains came to take them out. The blow was swift and terrible. It bathed a wide stretch of country in flame and literally tore out the center of the town leaving a fringe of houses along one edge. Destruction was swift and complete. People were burned in the houses in the town, drowned in the lakes where they had taken refuge, smothered in root cellars, overtaken on the roads and trapped in the woods. One couple put their seven children in the root cellar for safety while they went to get their stock. The fire cut them off from the root cellar. Through some miracle they themselves escaped, but only to find their seven little ones smothered to death by the smoke and gasses. The loss of life on every side was frightful.

It is reported that 300 bodies have been found so far and the search of the back districts has but just begun. Hundreds more will be found and many a silent spot in the forest will keep its gruesome secret to the end of time.

Still another branch of the devil dance left the St. Louis valley to the Eastward and descended all unheralded on the far flung eastern suburbs of Duluth. A night raid from the forest on a mighty city. Two hundred deaths tell the horrible story.

*Photograph by McKenzie, Duluth*

WRECKAGE WHICH TELLS A GRUESOME STORY

The unfortunate woman who lived in this house took refuge in the dugout root-house and was smothered to death by smoke and gasses.

Between these towns, including an area of thirty miles across, lies desolation. Many another smaller town felt the heavy hand of the forest fire, and paid a heartbreaking toll of human lives. Many a tragedy was played that night in isolated forest homes far from any helping hand. Many an unselfish hero died unknown in vain attempts to save the ones he loved. Many a little group of charred and blackened bodies tells the sickening story of fleeing families overtaken in helpless flight on those lonely forest trails.

It will be days before the list of dead, already soaring

toward the thousand mark, can be considered even approximately correct; it can never be complete. It will be weeks before the property loss, mounting high into the millions, can be even guessed with any degree of accuracy.

The loss of merchantable timber was comparatively small in the light of the area covered, but even that when the young growth is included will be a staggering total. The loss of property, owing to the destruction of so many towns and country homes, will be enormous. The loss of life is simply appalling even in these times of war when ever-swelling casualty lists make life seem lightly held. It is far the most disastrous fire in Minnesota's history, and when the whole truth is known few will be found to surpass it anywhere.

*Photograph by McKenzie, Duluth*

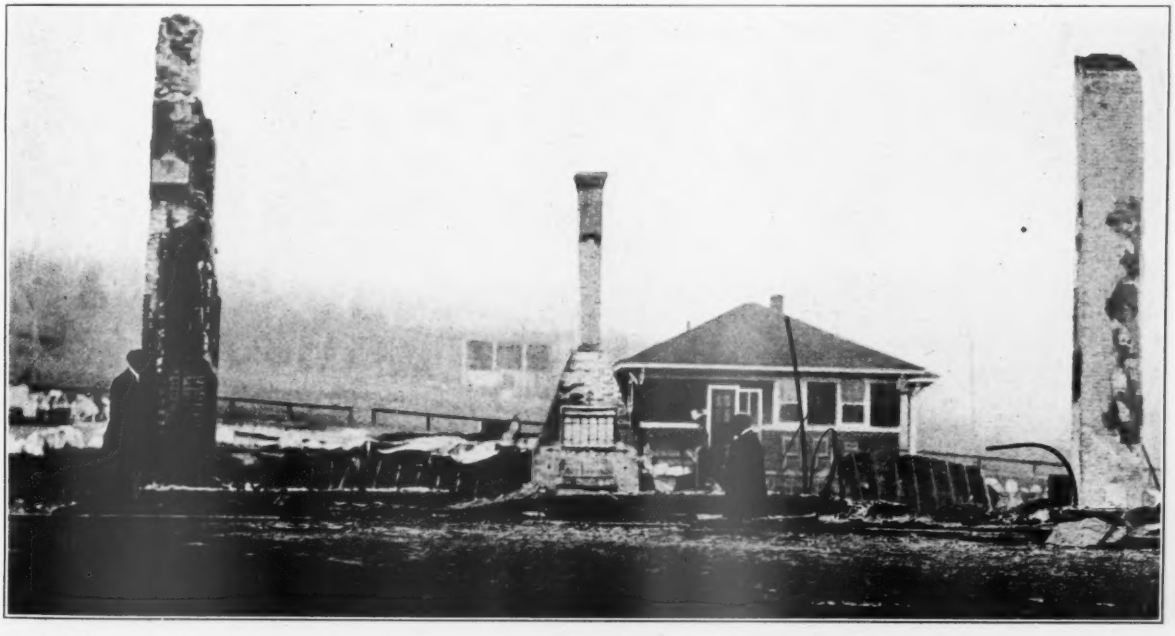
LINES OF WIRES BROUGHT DOWN

Rows and rows of telegraph poles leveled by that sixty-mile a minute wind, but unburned.

It cannot be traced to any single cause. The rainfall was eight inches below the normal last year and has fallen twelve inches below the average so far this year. The leaves had fallen and the weather was unseasonably warm. Certainly these were prime conditions for a sweeping conflagration. Add to this a sixty or eighty-mile wind that raged for several hours, and the stage was set. The rangers could not be given the needed help. Four years ago a pennywise legislature cut the force in half and invited this disaster.

Four years of inadequate patrol service has allowed the conditions grow steadily worse. Luck has been with us. Today the luck has changed and the inevitable has happened.

Probably no bronze tablets will be erected, no dedication ceremonies performed, but none the less will these blackened acres, these desolate, ruined homes, and the silent graves stand as a memorial to the men who arbitrarily abandoned the northern peoples to this fate.



*Photograph by McKenzie, Duluth*

THE ONCE FAMOUS DULUTH COUNTRY CLUB

A remarkable thing, and of the freak tricks of the fire, was that the small and apparently easily inflammable bungalow in the rear was untouched while the club house was completely demolished.

# THE GREAT MINNESOTA FIRE

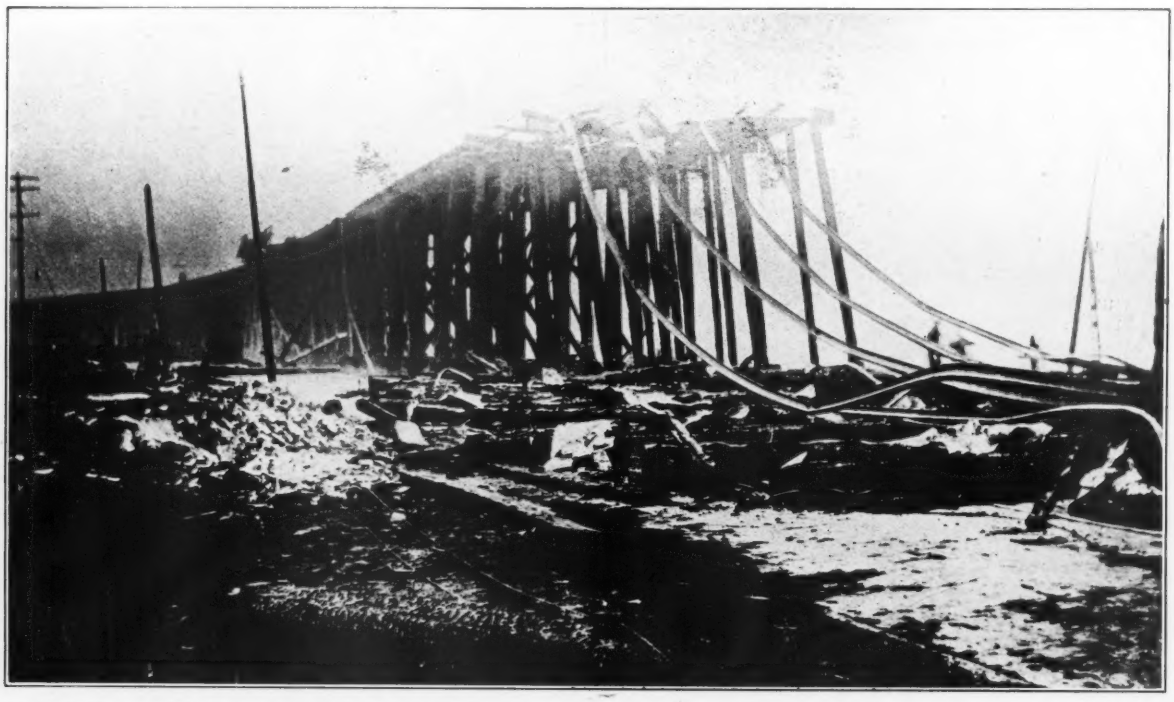
## BY J. F. HAYDEN

A PRAIRIE fire keeps pace with the wind, but it can be outwitted. Backfiring will open a path to safety. But a forest fire, unchecked by wide fire lanes and fanned by a high wind whose velocity is increased by the atmospheric disturbance caused by the fire itself, cannot be avoided nor evaded. Speed counts for little, for flaming brands, carried on the wings of the wind, fly ahead of the fugitive and cut off escape. And when fires break out in many localities at once, as was the case with the fires that raged in several counties of northeastern Minnesota, and are still unsubdued, fleeing settlers can find no haven of safety.

Take the map of Minnesota and mark the boundaries of an area with Bemidji on the west, Duluth on the east, Hibbing on the north and Brainerd on the south, and you will have roughly the area over which the most recent and the most disastrous holocaust has swept.

Minnesota has had bad forest fires in the past. The Hinckley fire of the fall of 1894 burned through much good timber, destroyed the towns of Hinckley and Mission Creek and took a toll of more than four hundred lives. Fourteen years later the city of Chisholm was burned and its six thousand residents made homeless. Much timber and other property was destroyed. In 1910 the northern counties of the State were fire swept. Here were many settlers making homes on the lands that had been cut over in lumbering operations, and the lives of more than one hundred of them were snuffed out.

The life and property losses of these previous fires are dwarfed by the latest fire disaster. Lives to the number of fully one thousand have been the sacrifice, and the property loss will probable reach well up toward $100,000,000. Many of those who were overtaken by the raging flames will be listed as "missing," for no vestige of their bodies remains. Dozens of others were burned beyond recognition.



*Photograph by Underwood and Underwood*

THE PROPERTY LOSS WAS PROBABLY ONE HUNDRED MILLION DOLLARS

Again we might believe this scene in devastated Belgium or tortured France, but it is really the wreck of the big trestle between Duluth, Minnesota, and Superior, Wisconsin. After the railroads ceased to operate, automobiles brought hundreds away from burning farms and towns, but many were trapped and burned to death.

There have been hints of incendiarism, by a widespread plot, but whether by this cause or by carelessness and lack of protective measures, conditions were such as to make the disaster inevitable once fires started and the wind blew.

Most of the territory over which the fires swept had, in years past, been denuded of its original forest growth of pine. Small towns had sprung up and settlers had gone into the outlying districts to reclaim homes from the stump lands. Second growth pine, tamarack and hardwood timber remained in many localities, and small mills had been brought in to manufacture it. Swamps had been drained to make farm lands—drained to a dry-

ness that made them dangerous fire beds in many cases. The vegetation of the summer was dead and dry; hay had been cut and stacked. No rain had fallen for weeks. Everything was tinder. Fires, started no one knows how, had been smouldering for days. Forest rangers and patrols had done what they could to extinguish them; but the force available was inadequate.

Following the Hinckley fire, the state legislature took measures to prevent recurrence of such disaster, and for several years funds were provided to support properly fire prevention work. But in the years that followed a sense of security born of small fire losses, resulted in relaxation. The Chisholm and Spooner fires followed.

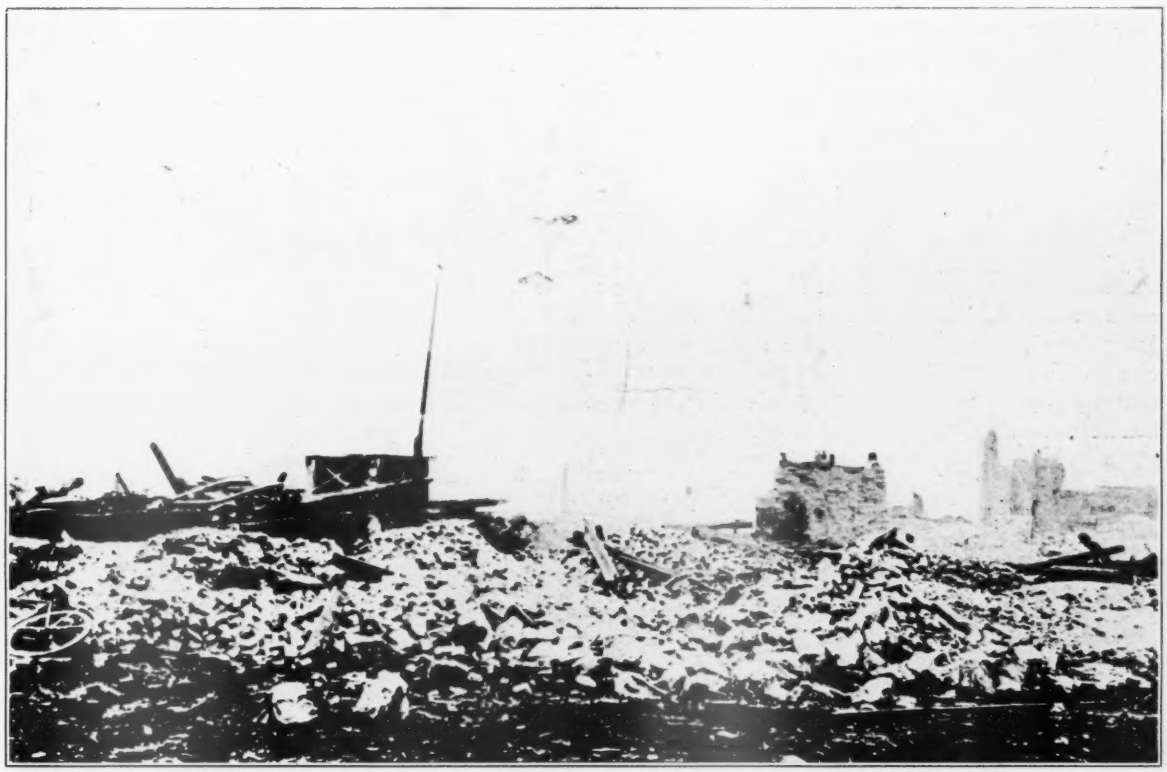
Again the legislature had a spasm of righteousness; and again it relaxed. At the last session, two years ago, the state forester asked for $75,000, and was granted about half that sum—too little to provide adequate protection and an efficient corps of rangers and patrols.

Perhaps the large sum would not have sufficed. Much of the area over which this latest fire swept was out of the forest boundaries—farm lands and sites for growing communities—but the state forest service would have had some jurisdiction.

The fire, or fires, for there were many of them, started and swept onward with such rapidity that the worst was over before information came out of the devasted districts. Because of destroyed telegraph and telephone lines, highway and railroad bridges, information in detail is even now only difficultly available, and it will be weeks before the full extent of the disaster is known.

A connected and general description of the fire is impossible. Personal experiences of those who escaped are mere incidents from scattered localities in the wide fire zone. Refugees crowd the bordering towns; morgues are full of bodies; dozens of dead are being buried in trenches where their bodies were found; charred remains of farm buildings and town residences and store buildings are everywhere visible; gaunt and blackened tree trunks stand sentinel over scenes of desolation.

State guard troops, state motor corps, state and county officials, the Red Cross and civilian volunteers under the direction of State Forester W. T. Cox, are fighting fires which break out anew, fanned by the shifting winds, and giving relief to those who are in need and can be reached.



*Photograph by Underwood and Underwood*

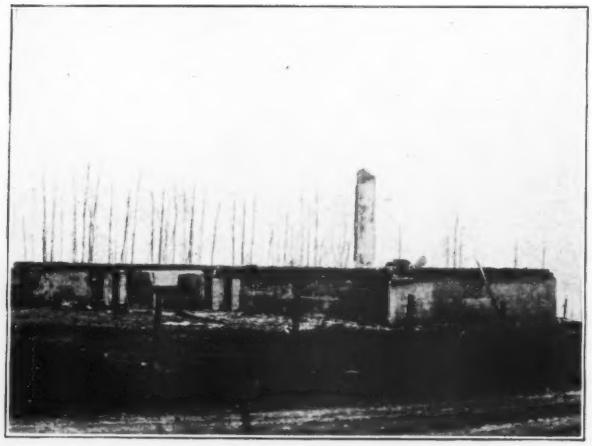
RUINS OF THE ALGER-SMITH LUMBER COMPANY'S YARDS

Furiously the fire raged at Rice's Point, near Duluth, levelling everything in its path. The last vestige of the lumber piles disappeared, all metal and wire work welding into a solid mass. The total loss of manufactured lumber was conservatively estimated at over 100,000,000 feet.

Actual loss to the lumber industry is represented chiefly by the destruction wrought at Cloquet. The two large mills of the Northern Lumber Company at that point were burned, with the entire stock of lumber. The planing mill of the Cloquet Lumber Company burned, with much of the company's stock—forty million feet, which, with that of the Northern Lumber Company totals one hundred million feet. Five small mills, at Kettle River, Lawler and Automba, manufacturing mixed hard and softwoods for the Parker-Kellogg Lumber Company, of Minneapolis, were destroyed. The loss of

good timber will not be known until the fires and smoke subside and accurate cruises can be made, but it is great.

In a general way, it may be said that the fire started east of Bemidji and, fanned by high northwest winds,



*Photograph by McKenzie, Duluth*

RAZED TO ITS FOUNDATIONS

Chimney, framework, everything gone. This was a schoolhouse in the Woodland district, northeast of Duluth, which stood in the path of the fire. Smoke still hangs behind the trees.

swept across Cass, Aitkin and Carlton counties to the suburbs of Duluth. Parts of Itasca, Crow Wing and St. Louis counties were touched, and there were scattered fires in other localities.

Wherever, and as long as railways could operate, schedules were abandoned and trains were given over to the removal of refugees to places of safety. Automobiles brought many away from burning farms and towns, but dozens of these were trapped and their occupants burned to death. Hundreds of people, escape by other avenues having cut off, rushed into lakes and stood nearly submerged for hours in the chilly waters.

Towns and villages in the path of the flames, and wholly or partly destroyed, were Cloquet, Moose Lake, Kettle River, Carlton, Lawler, Adolph, Munger, Five Corners, Harney, Barnum, Grand Lake, Maple Grove, Twig, Matthew, Atkinson, Brookston, Brevator, White Lake, Pine Hill, Automba, Ronald, Salo, Kalbata, Split Rock, McGregor and Warba.

A summary of the situation, insofar as can at present be determined, is that more than twenty-five towns have been destroyed; twelve thousand square miles of territory have been devastated and all of the settlers' homes burned; More than thirteen thousand persons have been made homeless; at least a thousand persons were killed; property to the value of from $75,000,000 to $100,000,000 was burned; practically all of the horses and fifty per cent of the other live stock in the district was destroyed; thousands of acres of valuable hardwood timber and much pine timber is rendered worthless; telephone and telegraph lines suffered approximately a half a million dollars damage, and highway and railroad bridges were destroyed.

Reconstruction plans are being worked out. So far as they have been completed, they include immediate supplying of food and clothing to survivors and feed for the animals; financing and government supervision

*Photograph by T. J. Horton, By Courtesy of the Minnesota Forest Service*

THE FIRE SWEPT WOODLAND

This tract of fire destroyed timber is just south of Automba and indicates the character of the destruction by the flames which spared nothing in their path. What timber still stands was killed by the fire and the timber loss in the fire area is complete.

*International Film Service*

PITIFUL PICTURES FROM MINNESOTA

**Automobiles brought many away from burning farms and towns, but dozens of these were trapped and their occupants burned to death. The upper picture shows the abandoned automobiles in which the terrorized inhabitants sought to escape. Hundreds of people, other avenues being cut off, rushed into lakes and stood nearly submerged for hours in the chilly waters.**

for rebuilding settlers' homes (this involves the waiving of the provisions of rule No. 21 of the Non-War Construction section of the War Industries Board which prohibits new construction to cost more than $1,000); supplying labor for the rebuilding and reconstruction of the burned district; making a complete survey of the live stock situation and preparing to restock the district; helping banks in the burned district to weather the situation and reopen for business; rebuilding of factories burned in Cloquet and homes needed in Duluth.

*Photograph by T. J. Horton, Courtesy of the Minnesota Forest Service*

THE RUINS OF AUTOMBA

This progressive little town on the edge of the forest was almost totally destroyed by the fire, only a few of the buildings being left. Tents are being used as temporary shelters by the survivors and relief was sent to them as soon as possible. So rapidly did the fire advance that the residents who got away saved practically nothing except the clothing they wore.

# EDITORIAL

## MINNESOTA'S FOREST FIRE DISASTER

ONCE more disaster in the form of a forest fire has overtaken Minnesota. Eight hundred lives and approximately one hundred million dollars in property were wiped out of existence. Surely a heavy responsibility rests somewhere. Had there been no warnings in the past the plea of unpreparedness might have some weight, but in the light of the destruction of Hinckley, Chisholm, Spooner, and Baudette the argument falls flat. These fires proved conclusively that death and destruction ever await forest and town alike if necessary precautions are not taken. In the light of this *past* history, the greatest conflagration in history has been allowed to develop and carry misery and poverty to thousands of people.

Whose is the responsibility?

The prevention of all forest fire in such a country as northern Minnesota is probably an impossibility; the prevention of a great conflagration is not only altogether possible, but the occurrence of such a fire is criminal. According to all reports the ground was exceedingly dry and the wind reached the proportions of a hurricane, but these alone cannot make a great conflagration. There are only two ways in which a conflagration can arise; from many small fires united, or from one small fire long neglected. Either one implies neglect, *criminal* neglect, when the terrible warnings of the past twenty-five years are considered. The responsibility for that neglect seems very definitely placed in this instance.

When the Minnesota Forest Service was created in 1911 a careful estimate placed the needs of the Service at $150,000 per year. The legislature appropriated $75,000. The experience of the first two years of operation showed clearly that $150,000 was the minimum for efficient service. The legislature of 1913 appropriated $75,000. In 1915 the minimum of $150,000 was again asked, and the appropriations committee of the Senate cut the appropriation to $40,000 in spite of the pleadings of all the foresters in the State and of all others interested. The dangers were pointed out, and the present disaster clearly predicted. The same committee in 1917, when the management of a new state forest of 300,000 acres had been added to the duties of the Service, held down the appropriation $50,000. In the face of all warnings and pleadings the fire patrol service in the north woods was cut to one man for every million acres.

Long before the fatal disaster of October 12 it was very well known that the north woods were full of small fires. The rangers knew it and they did all that was humanly possible to put them out. They extinguished many of them; but for one man to put out all the fires on one million acres in a dry season is an impossibility. Given an adequate force of patrol men the small fires would have been taken care of promptly and such a holocaust as we have just witnessed would have been an impossibility.

*Photographs by T. J. Horton, Courtesy of the Minnesota Forest Service*

PART OF THE PRICE THAT WAS PAID THE FIDDLER

It seems incredible that after the terrific disasters from fire in the past, Minnesota must record a repetition of such history today. Surely the voters of the State, who are property owners and tax payers and as such entitled to protection by the commonwealth, will this time register their protest in no uncertain terms and guarantee the future as far as is humanly possible. The first picture shows the ruins at Moose Lake; the second is a bird-eye view of Cloquet after the fire had passed; (note the temporary tent shelters) and the third is a farmstead west of Moose Lake where reconstruction work is already under way. The free stock on this farm alone escaped.

Without question the graves of those 800 innocent men, women, and children; and the scattered ashes of those thousands of homes are a gruesome memorial to the misplaced parsimony of the state legislature. It is doubtful if the action of the legislature regarding protection from forest fires met with the approval of the people in the past. It is certain that it will not be approved in the near future. We are fighting the greatest war of the world as a protest against the unwise use of arbitrary power in Germany; how long must we put up with it at home?

The settlers who were burned out in this great fire were tax payers. For what were those taxes paid if not for fire protection? It is almost all that some of them can get. The argument has been raised that protection should be furnished for the state lands alone. It would be a fine city fire department that would protect nothing but the city hall.

It is to be hoped that the people and the legislature of Minnesota will now see the light. The old saying that "An ounce of prevention is worth a pound of cure" is nowhere more applicable than to a forest fire.

# PRESS COMMENTS ON THE FOREST FIRES

IT is interesting and informing to note the reports and comments on the forest fire disaster in the leading papers.

Condemning the parsimony of the Legislative body in Minnesota, the *Minneapolis Journal* says editorially:

The Legislature of 1915 reduced the annual appropriation for the Minnesota Forest Service from seventy-five thousand dollars to forty thousand dollars. This was done by the Senate Appropriations Committee in the face of the estimate of the Service that the appropriation should be doubled, in order to provide adequate protection from forest fires.

Certain State Senators, however, desired to punish the Forest Service for its share in securing the adoption by the people of the Forestry Amendment, Number Nine, to the State Constitution. It was speciously argued that the expense of fire protection should be paid by the lumber companies and the railroads, and not by the State. Accordingly the appropriation was cut almost in two.

The Forest Service had planned to put a patrolman on each ten townships in the dangerous districts, instead of one to twenty-five townships as it had been doing. But the Legislature gave it only money enough to give each patrolman the vast area of forty or forty-five townships to guard.

The service had already demonstrated the value of its work in fire prevention. Before its organization fire losses in Minnesota had averaged a million dollars a year, with occasional disasters like the Hinckley and the Baudette fires, which not only destroyed much property, but caused great loss of life. Organized in 1909, the Forest Service had in six years prevented any great conflagration, and in 1914 had held the property loss down to sixty-one thousand dollars, although 265 fires broke out.

In the face of this showing and of the pleadings of Northern Minnesota for better protection, the Legislature of 1915 persisted in reducing the appropriation to a meager forty thousand dollars a year. Commenting on this state of affairs, the *Journal* on April 22, 1915, said:

"It is to be hoped that, until another Legislature can act with wisdom in protecting the forests, no great forest fire gets beyond the control of the crippled Forest Service and destroys lives and property."

This hope was borne out, so far as fires were concerned. There was no great disaster before the next Legislature met. But that body showed no greater wisdom than its predecessor, and in a spirit of false economy held the appropriation to fifty thousand dollars a year.

The terrible harvest of this legislative parsimony has now been reaped in the fire stricken sections. A thousand useful lives have been wiped out under appalling conditions. The State of Minnesota saved a few thousand dollars, and now loses perhaps as many millions. And the property losses fall, not on the railroads and the lumber companies, but on the cities and villages and heaviest of all on the poor settlers through this region. The merchantable timber has mostly been cut from these devastated lands, which were covered with dry brush, slashings and other inflammable material. The Forest Service, crippled fatally by legislative hostility, has been unable to detect and stamp out fires as quickly as they broke out.

The State of Minnesota and its citizens will now spend many thousands of dollars for relief of the fire sufferers. The State will lose, too, the taxes on the property that has been burned up, and the products of the industries and the farms that have been wiped out.

Is it necessary for our Legislatures to learn wisdom at the expense of such torture to human beings and such tremendous property loss? Will the coming Legislature provide adequate protection for the life and property in other regions of the North Country now untouched, but quite as liable to disaster?

And in its issue of October 17th, approving the plans of the State for relief and protective measures, the *Journal* continues:

The decision of the State Public Safety Commission to devote all the funds remaining at its disposition, some $284,000, to the pressing work of relief in the fire-swept districts, will of course be generally approved. It was eminently the right thing to do, despite the fact that the Legislature foresaw no such use of the money. But neither the last Legislature nor its predecessor ever displayed any foresight with regard to the possibilities of such disaster in Northern Minnesota.

There is ample justification for the assertion in resolutions adopted by the people of Hibbing and Stuntz, that the State of Minnesota is "morally responsible" for the loss of life and property, because it has never afforded adequate protection against the constant menace of forest fires. The mass meeting demanded that an extra session of the Legislature be called at once to furnish immediate relief, to "set on their feet again hundreds of settlers who have lost everything they had," and to pass such laws and make such financial arrangements as will prevent a recurrence of similar catastrophies, "a recurrence which is absolutely certain, unless protection is afforded by this State."

With the provision of an immediately available fund by the Public Safety Committee, supplemented by voluntary contributions from all over the State, and with the new Legislature scheduled to meet early in January, it is probably not necessary to call an extra session at this time. But there is crying need for comprehensive legislation that will provide not only for adequate protection in future, but for the huge task of reconstruction.

If the State is morally responsible for what has happened, it is only fair that the State should bear the entire financial burden of what must be done. In this way the expense, duly spread on the tax rolls, would be equitably distributed among the taxpayers. It ought not to be necessary to ask the public, which has already responded to numerous "drives" for war philanthropies, and which is soon to be called on to fill the "war chest" for the coming year, to make these extra contributions at this time. But the need is exigent, the public is deeply touched by the tragic condition of the fire victims, and subscriptions are already flowing in with increasing volume. There is immediate use for every dollar.

At the earliest opportunity the Legislature is bound to provide a fire department that will guard other large areas in the North Country from similar visitations. Every city of any account has a fire department to protect the lives and property of its citizens. What possible excuse is there for the State to do less for its citizens in the regions where forest fires are an ever-present menace?

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The *Philadelphia Inquirer* lays the blame for the conflagration to unprotected slashings, and says:

So long as Wisconsin, Michigan and Minnesota continue to leave their forests and pine-slashings unprotected, just so long may great conflagrations like that of the last few days be expected. They have been periodical since the white man began his murderous onslaught on the pine trees, and will continue until scientific care, such as the Federal Government exercises over its own great reserves in the Far West, is enforced.

Those who have traveled through the forests of the States mentioned have been amazed that no greater damage has been done. The seeker after pine or hemlock logs leaves behind him all the materials for a first-class conflagration at any moment. After a dry autumn, such as has been experienced this year, there seems nothing for a fire to do but run its course. The

States which have been so prominent in forwarding "civic righteousness" are not always those which have shown the most common sense in protecting the lives and property of their citizens.

The forests of Michigan and Wisconsin were ruthlessly debauched in one of the greatest economic blunders in our history. Not only was the good timber taken, but no efforts were made at afforestation. Timber which was not needed was destroyed and material for conflagration accumulated. A wise policy would have left today in those States stands of timber which would be reservoirs for all future time. We have sowed with the sack and not with the hand, and have paid the penalty of our folly.

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Under the heading "Northwest Forest Fire A National Calamity," the *Pittsburgh Press* sounds a warning against carelessness with fire in the woods:

While forest fires are a constant source of costly waste and danger in this country it is not often that they reach such sensational proportions as the one that has just swept large parts of the States of Wisconsin and Minnesota with a loss of from 1,000 to 1,250 lives and a property loss of somewhere in the neighborhood of $75,000,000, of which $25,000,000 is covered by insurance. The wiping out of so many lives, the irreparable destruction of so much valuable timber, and the infliction of so heavy a blow on the insurance companies, make the affair a genuine national calamity.

There is a theory that the fire was of incendiary origin. In a state of war, on the heels of so many exposures of German spy activities, it was to be expected that the theory of incendiarism would be held in many quarters. But it is needless to resort to such an assumption. Sheer carelessness has caused hundreds of other extensive forest fires, and it is an entirely sufficient, and moreover an entirely probable, explanation of this one.

The hunting season is on, and hunters who neglect to extinguish thoroughly their camp fires are by no means a rarity. The fact is that their frequent if not habitual carelessness in this regard necessitates the organization of regular forces of forest rangers, whose whole time is employed in patroling the great timber sections to keep fires under control.

A single camp fire carelessly left smoldering may have caused this great fire in the northwest with its awful toll of life and property.

Indeed, a single cigar stump tossed thoughtlessly into a clump of undergrowth may have kindled it.

There was a time when the people of the west used to deal with carelessness of this sort as they dealt with horse thieves. Could you blame them?

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Emphasing the seriousness of this loss of timber, so vitally necessary in the winning of the war, the Springfield, Ohio, *Sun* says:

We learn with apprehension of the serious conflagrations in the forests of northern Minnesota and Wisconsin, for at this crucial time in the history of the entire world, when the war hinges upon America's ability to bridge the Atlantic with ships, such forest fires are particularly disastrous and the loss of timber therefrom will mean a serious handicap to the nation, more particularly its ship building program.

The fires have wrought havoc in Minnesota and Wisconsin, killing many, making thousands homeless and completely annihilating scores of hamlets and villages.

The United States cannot afford to have such devastating forest fires. It has been estimated that about one-fourth of the area of the United States, or 550,000,000 acres, is in forests and it is also authoritatively stated that the present rate of cutting timber exceeds the annual growth of the forests, thus reducing the amount of standing timber. And as the rate of cutting timber has been tremendously increased lately due to the demands for lumber for ships, cantonments and for overseas uses, it can easily be seen just how serious the present fires may be, for in a few days' time the flames can destroy more timber than is cut for use in an entire year. Already the loss has run into the millions of dollars.

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No explanation is given of the forest fire that blotted out twelve towns in Minnesota, destroyed hundreds of prospersous farms, and cost the lives of 1,000 persons, says the Chicago, Illinois, *Journal*.

Probably to those familiar with the region, the conditions which permit such a disaster are commonplace; but certainly they are not commonplace to the outside world. How a country can be so thickly forested as to permit the unbroken sweep of the flames, and yet so thickly settled as to be dotted by a dozen towns and thousands of homesteads is a puzzling problem when viewed from a distance.

Relief has been rushed to the stricken district from St. Paul and Minneapolis, and probably the call for help will be sent widely through the land. If so, it should meet a generous answer. We have learned to give, these days, and there is more than one field in which we can apply the lesson.

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Referring to the cause and responsibility for the fire, the *Pioneer Press* of St. Paul, Minnesota, says:

The obvious and businesslike way of laying bare the entire situation in connection with the forest fires has been taken by Governor Burnquist. A commission of nine business men in whom the public has confidence will conduct the probe and the results will be laid before the coming session of the legislature as a basis of procedure to prevent a recurrence of the tragedy. This course will meet general approval. There is little doubt that the commission will determine that an inadequate patrol, as the result of legislative shortsightedness, is primarily responsible for the spread and extent of the fires. This will tell the legislature nothing that has not been told its predecessors with force and eloquence, but with the catastrophe fresh in mind and under pressure of an aroused public opinion there is reason to hope the folly of the past will not be repeated. If it is, we may be assured the catastrophe also will be repeated, sooner or later.

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Reviewing the situation in a broad and comprehensive manner, the *Christian Science Monitor*, in a forceful editorial headed "The Woodland Catastrophe" says:

It is a striking and far from pleasant commentary on the times that, while the United States is reaching out in all directions for man-power, raw material, and financial means necessary to the maintenance of war activities at the highest pitch, only passing notice is given by the press and the public to a disaster in Northern Wisconsin and in Minnesota which has resulted in the devastation of five counties, with the destruction of more than 800 lives and a property loss of approximately $100,000,000.

The war and the tremendous questions growing out of the war accounts in a large measure, of course, for the seeming indifference of the nation to this catastrophe. Moreover, Wisconsin and Minnesota, having made provision for possible occurrences of this kind, by creating large emergency funds, are not crowding either the wires or the mails with appeals for outside help. Liberal aid has been extended to the survivors; the work of providing food, clothing, and shelter for thousands of families made homeless was begun even before the smoke of the forest fires had disappeared; Wisconsin and Minnesota are not unloading their troubles on the rest of the republic, and so the rest of the public apparently regards the calamity as merely a passing circumstance, and proceeds to forget it.

There is some excuse for this in the fact that forest fires, and terrible forest fires, are not rare in the United States. But there is lurking danger in this excuse. Carelessness is not new to the United States. Fires, sinkings, and even explosions, were not rare in the United States before the war, and this very fact enabled conspirators and incendiaries to carry on their work with comparative safety from prosecution after the war began. Even now, when a vessel sinks at its dock, or conflagrations occur in forests from which timber is being drawn for the Government, and situated close to shipbuilding yards, there is always the ready presumption of common carelessness. So it is in the present case; while the origin of the forest fire is admittedly "mysterious," and the rapidity of its spread "unaccountable," yet it is quite easy for some people to find an explanation for the one in the negligence of campers, and for the other in the high winds.

Similar excuses were offered in connection with outrages committed by the I. W. W. in the Pacific Northwest. Not an atrocity perpetrated by German agents or German sympathizers in the United States since the war began has lacked an "explanation" on grounds calculated to quiet suspicion or forestall investigation.

Certain phases of the Wisconsin and Minnesota forest fires demand the attention of the state and federal governments. This tragedy in the woods of the old Northwest should not be accepted as a matter of course. The "accident" theory with reference to disasters which affect the nation's war industries is worn threadbare, and the cause of such "accidents" should be sought and found at any cost of time, labor and money.

The period through which the country is passing is one in which vigilance should be intensified rather than relaxed.

# USE BUT DO NOT ABUSE FARM WOODLANDS

By C. R. Tillotson

FARM woodlands are today being drawn upon for large quantities of timber for war purposes. There is a big demand for logs of black walnut, white oak, hickory, spruce, black locust, yellow birch, yellow poplar, rock elm, ash, white cedar (in the Southern States); and also for the bark of chestnut, oak, and hemlock if near tannin-extract factories. Large, sound trees of these species should be cut and marketed for war purposes, and under no consideration used for cordwood except as their tops and branches may be utilized for this purpose.

Farm woodlands are also furnishing perhaps double the ordinary amount of wood for fuel. This increased demand may result in considerable and lasting damage to the woodlands unless certain precautions are taken. On the other hand, the cutting of cordwood affords each owner of woodland an opportunity to clear his land and put his timber in better condition. To accomplish this the idea to keep in mind is to remove for cordwood the poorer, less valuable trees, leaving the better ones to stand. In removing the fuel wood the greatest precaution should be taken not to injure the more valuable trees or the young growth. Briefly, the material which should be removed is as follows:

1. Sound sticks lying on the ground. This will include tops which have been left in logging operations, and trees which have been blown over by the wind, crushed down by snow, or otherwise toppled over. If left on the ground these tops and trees are a serious fire menace, will eventually rot, and are then of no value for any purpose.

2. Dead trees which are sound and still standing. They are usually dry, make good firewood, and are of no account in the woods.

3. Trees which are diseased, or are so seriously injured by insects that they will probably die; and also trees which are specially subject to serious disease or insect attack. By cutting them out the spread of the disease or insects may be checked. Thus chestnut, which is almost certain to be killed when attacked by the chestnut bark disease, should be cut out in preference to other kinds of trees whenever this disease is present.

4. Crooked trees which are crowding out straight ones. The former will not become valuable timber trees while the latter may.

5. Large old trees unsuitable for lumber, and having big tops which shade out numerous smaller trees growing beneath them.

6. Small trees which are overtopped and stunted by larger and better ones. The former are not likely to develop into trees of any value.

7. Trees of the less valuable kind which are crowding good trees of the more valuable kinds. Thus a black oak or a beech which is crowding out a white oak or a hard maple of equal size and health should be removed.

8. Trees which by some chance are growing on ground unsuited to them. They will not grow into valuable lumber trees. Thus a yellow poplar on a dry ridge should be cut out in preference to a hickory, an oak, or a pine in its locality.

9. Slowly growing trees which are crowding out equally valuable kinds that grow faster. Thus a white oak, hickory, or sugar maple should be removed in preference to a yellow poplar, black walnut, or ash.

10. Trees badly fire-scarred at the butt. These are of less value for lumber than sound trees. They usually become rotten, and are among the first to be blown over by heavy winds.

11. The ideal trees for cordwood are those which range from 4 to about 10 inches in diameter. The yield of cordwood from trees smaller than 4 inches in diameter is very slight, and trees larger than 10 inches in diameter are usually more valuable for some other purpose, unless they are defective.

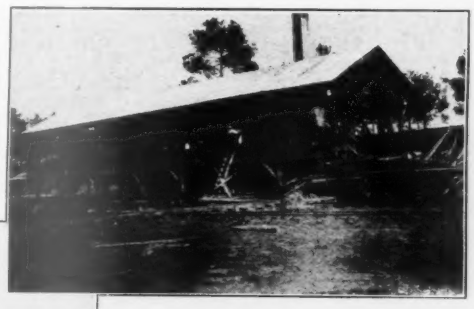
# A MARITIME PINE OPERATION IN FRANCE

## WITH OUR FORESTRY ENGINEERS

BY CAPTAIN JOHN D. GUTHRIE, A. E. F.

LUMBER is a necessity to Modern War, lumber in unbelievable quantities. The Forestry Regiments came to France to help furnish lumber in the World War and they are doing it with a vengeance. They are doing it cheerfully, gladly, without any of the "glamour and glory of war" to sustain their morale.

Company — of the — Engineers, Forestry, is doing its part and this article deals solely with the operations and life of the one Company, only one of the many now cutting and sawing lumber in France to help put the Hun where he belongs. The details, the lights and shadows of the organization of the Company, its stay at Camp American University, the trip across, its stop in England, its stay in Central France, might be of interest but have no immediate direct bearing on the story of Company —'s logging and milling operations. For obvious reasons it is best not to tell where the Company is located—suffice to say that they are operating in the maritime pine region of France, in a flat, sandy country, a part of France once a waste of sand dunes but wisely reclaimed by the French foresters, by forest planting, so that what was once almost a desert is now one of the most productive parts of entire France. This production consists not alone in lumber from the immense forested tracts, but also in naval stores, turpentine and rosins.



ON THE OPERATION

First, skidding the logs to the landing, loading, and the mill itself in February, 1918. The flume completed, ready for water and logs (the Company's crack pitcher, Sgt. Bill Smith, facing the camera). And finally the night shift at work under electric lights. Note the "No Smoking" sign. Always, safety first.

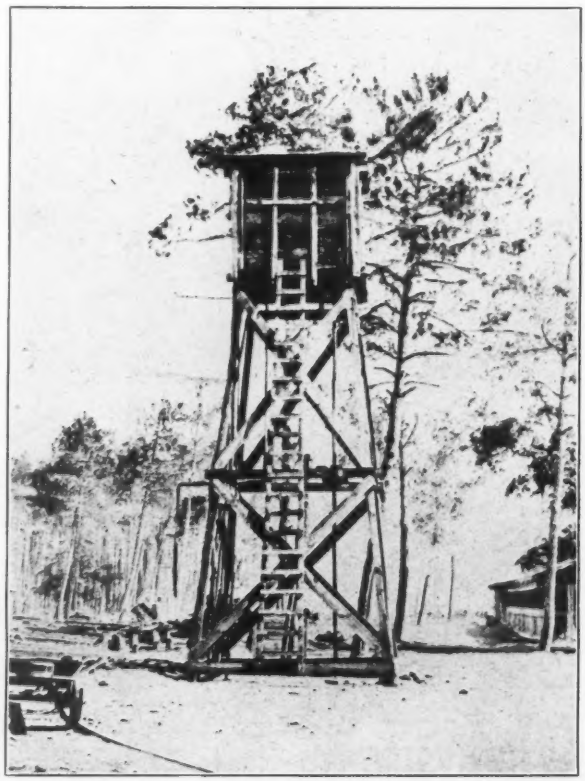
Company — landed in this part of France on a Friday morning in late October, and on the following rainy Monday morning the woods crews were at work in the nearby forest felling special timbers needed at once for war uses. By Thursday of the same week the first timbers were loaded by the Company for shipment. This is believed to be the record for timbers for war purposes for the entire regiment. The horses had not come, so the wagons which had arrived with the troops were useless. However the wheels and axles of several heavy dump carts were on hand, so not to be held up by such a small thing as lack of horses for skidding, American rescurcefulness came to the rescue, and swinging one end of the logs under the axles and some 15 to 20 men taking the places of horses, the 45 and 50 feet timbers were hauled to the main wagon road where they were loaded onto the heavy motor trucks and went to the railroad shipping point—and the rain fell steadily all the time! Were the men downhearted? Not a bit. Here was work they could do, work in the woods, here was the job they came over to tackle, a job they knew, and although for days wet to the skin, laughing and singing they went to it. A few days later the horses came and then matching up teams, trying out teams, and soon work settled down into that of a logging camp.

This camp was wet—though the highest site that could be found—the ground was wet, everything was wet.

There were no floors to the tents, there were no bunks nor cots, no stoves—soon the mud was about like that Flanders mud we've read so much about. It was rather sloppy lining up in the dark mornings for roll call while someone held a lantern back of the top sergeant while he read the orders of the day. On one of their especially dark and wet mornings, a private, routed out of his tent by the sounds of "Reveille," inquired as he came out of his tent, "What it is—a night attack?" But in spite of the rain, damp clothes, wet feet, wet woods and the mud, the work went on.

Here at this Camp the Company had its first Thanksgiving in France, and although the turkey and fixings were late in reaching Camp, they did arrive, and the cooks did themselves proud by spending the entire night before Thanksgiving cooking turkey for 250 men—no small undertaking in the army field ranges, under a tent fly with wet wood! But the turkeys were cooked and every man had his fill of a real Thanksgiving dinner.

The Company remained at this Camp for about two months, getting out special timbers, felling sawlogs and cutting cordwood, then moved to its present Camp, a well drained and better site. Before moving to the new Camp a barn, a mess hall, kitchen and store house had been put up, floors had been made for all the tents and the stoves had arrived, so that when the men came to the new Camp, just before Christmas, they began to live, and life took on a rosier hue, especially after another fine turkey dinner and the arrival of many Christmas packages and letters from home. On New Year's eve a snow came to make it seem more like winter, the first snow, the local people said, in twenty years.



THE WATER TOWER

Cleanliness being next to godliness, this thirty-foot tower is held in high respect by our forestry soldiers, for it makes possible the shower baths they so thoroughly enjoy.

While waiting for the mill machinery to arrive a small French sawmill was leased by the Company and sawing began, night shifts only, in the first few days in January, and the first sawn product from the Battalion was loaded out by Company —, as they had previously been the first to cut and ship the first war timbers. It was an interesting experience for the sergeant and his squad of eight men sawing logs with an old French sawmill, with sawmill machinery certainly unlike anything they had ever encountered before, but they turned out the lumber and beat the crew of Frenchmen who used the mill during the day time—in the meantime the felling of sawlogs and the getting out of hewn ties was going ahead in the woods. The parts for the Company's mill (20,000 ft. B. M. capacity) were dribbling in, and finally, on February 27, 1918, the first log was sawn in Company —'s mill, the first 20,000 foot mill of the — Engineers to be completed. And here a word of appreciation is due the Battalion Engineer Officer, the Master Engineer and the crew of Company millwrights who worked untiringly and enthusiastically to get the mill completed and running, but who were held up by delays in the receipt of parts, delays as unavoidable as they were exasperating, for building a sawmill in France, in wartime, over 3000 miles from a source of supplies, is not an easy matter. How pleased every man in the Company felt when the saw hit the first log and they heard its music as it went s i n g i n g its way through the first big maritime pine! The Sergeant Sawyer ——, who handled the lever, was duly impressed by the occasion and handled matters like the experienced sawyer that he is.

Company —'s timber consists of three different tracts and, while joining, are very irregular in shape, and the three tracts contain 80,000 trees covering some 11,000 acres. Here it may be said that timber is sold in France by the tree and not by the board foot. All trees are cut on these tracts; clear cutting or as the French call it, *"couper a blanc,"* is followed; the area will be planted again to pine later. About 85 per cent of the trees are of saw timber size. The mill being located on the main wagon road a narrow gauge railroad was necessary to haul the lumber from the mill the 2½ miles to the shipping point. The mill is built on leased land about a half mile from the edge of the Company's timber, so a narrow gauge railroad was necessary to transport the logs from the woods to the mill, some 10 miles of logging railroad being required on account of the irregular shape of the tracts and the distance from the mill. The farthest timber is some five miles distant. Two "Dinkey" engines are in use, a 10-ton one to haul the logs from the woods to mill and a 20-ton one to take the lumber from the mill to the shipping point.

The woods work is carried on under the supervision of

"SNAPS" OF OUR FORESTRY BOYS IN CAMP "SOMEWHERE IN FRANCE"

"All work and no play makes Jack a dull boy" so there is plenty of diversion. Taking the pictures from top to bottom, we see a ball game, when the day is done. Then "Sergeant's Row" with Top Sergeant Billingslea's tent on the right, proving that he is living in luxury! Then that ever-popular person, the camp cook, entertaining a visitor between meals. The mess hall is seen in the background. Then the barn, which accommodates sixty-five animals. At the top and to the right of the page are shown docks and dead rolls and boards coming from the edgers. Then a "railroad" company starting work on a road to one of the shipping points. Diversion once more—a sergeant and a wagoner making good with the ladies, and finally the camp in the early part of 1918, showing the remains of the big snow of January 2nd.

a lieutenant who has two sergeants under him, one in charge of the felling and brush cutting and the other looking after the loading and railroad building. Under the sergeants are corporals in direct charge of felling, brush cutting, loading, railroad construction and scaling. The fellers work in two-man crews and fell on an average 6000 ft. B. M. per day. To keep the mill going night and day shifts some 300 trees per day must be felled and put on the railways at the mill. Loading in the woods is done with a "Gin-pole" (see photograph) which works very efficiently. The tops of the trees (and there isn't much top left) and the limbs are converted into cord wood or charcoal, in the wods, the charcoal burning being done by a crew of Spanish laborers for a French munitions plant in the region. The forests contain a very heavy growth of underbrush, from 4 to 10 feet in height (*sous-bois,* the French call it), very prickly and nasty to handle and very easy to burn. This all has to be cut and piled for burning later. Needless to say that stumps are cut low, eight inches or under, as a rule as low if not lower than the French cut them in this region. In short the principles of forestry in the main are being followed. The reputation of American foresters is at stake in the operations of the Forestry Regiments; in our lumbering operations over here we are going to be judged largely as foresters, not as lumbermen, and here let me say that the American lumbermen and the American lumberjacks in the Forestry Regiments are receiving a liberal education in forestry over here and the prediction is made that they are going to return to the United States with a whole lot clearer idea of the value of forests and forestry than they ever had before. The region where Company — is operating is a striking example of the wisdom of forestry. A waste, almost a desert, has been converted into a highly productive region through the planting of pine. In the woods the logs are hauled to the railroad landings with horses and "big wheels," the Company using some 60 head of horses in its operation. The big wheel bunching and loading is in charge of two former lumberjacks who worked for a purchaser of Government timber on a National Forest in New Mexico; both know their business and are good, steady men.

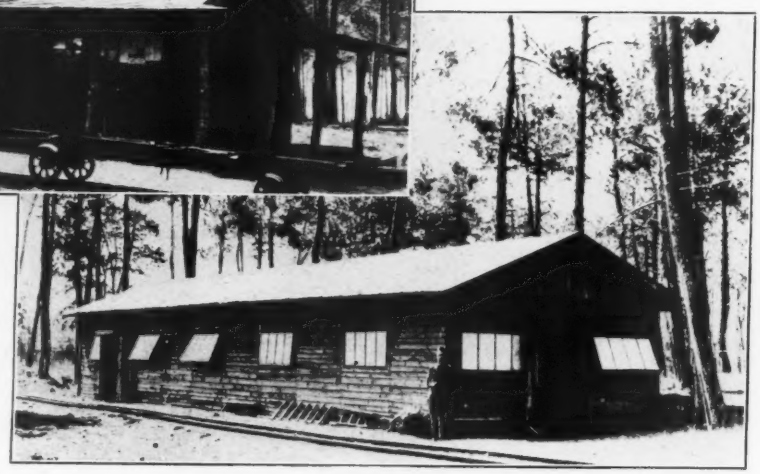
The mid-day meal for the woods crews is sent out to them on the logging train. The men are working 10 hours, the mill running 20 hours out of every 24, except on Sunday when as a rule no work is done. On Saturday afternoons the men shave and clean up and line up for inspection, when their personal appearance as well as their tents are looked over critically. At these inspections the kitchens, mess hall, stable, meat houses and entire camp are also inspected to make sure that the camp is kept in a neat, orderly and sanitary condition.

The mill is rated at 20,000 ft. B. M. per day capacity, but has been averaging 30,000 ft. per 10 hour shift. The record cut for 10 hours to April 10, was 38,660 ft. B. M.

The mill is equipped with circular saws, edgers, cut-off saws, and a very satisfactory electric lighting plant for the night shift. This plant (20 H. P. Engine) supplies lights for the entire camp, stable, kitchens, mess, office, and there is a light in each tent. At one end of the mill are two rollways with tracks on the outer side of each and a flume in between. This flume was considerable of an experiment at first but has proven very satisfactory. The logs are brought in from the woods on light cars, are rolled off onto the rollway, then dumped into the flume, poled to the haul-up and raised directly to the log-deck by the side of the carriage. The boiler furnaces are equipped with "dutch ovens" enabling the larger part of the sawdust to be burned. The mill is under the super-

THE OFFICE AND OFFICERS MESS

The side-walls are covered with slabs and the porch columns are made of cork-bark oak.



THE Y. M. C. A. HUT

This shows the sergeant in charge of all construction work standing at the corner of the hut.

vision of a lieutenant who has two sergeants directly in charge, one in charge of the day shift and the other in charge of the night shift. The sawyers are experienced men in that line and have the grade of sergeants.

The mill is built some seven feet above the ground and at one end the level of the mill floor is extended onto a long dock onto which the lumber is conveyed by a series of live and dead rolls. On the dock the lumber is sorted and slid down sets of skids directly onto cars which, after loading, are shifted out onto the main yard and picked up by the dinkey and taken to the shipping point. Two turntables and a series of switches made by the Company's efficient blacksmiths render the loading and shifting of cars at the docks and in the yards a simple matter. The lumber goes direct from the saw onto cars and thence to the shipping point where a large lumber yard is maintained.

The camp site while small is well adapted to the purpose. A very attractive and conveniently arranged office building was put up. The building is bungalo style, with side walls covered with rough slabs, a wide porch with columns of cork bark oak. In this building is the main office, with a large sliding window for use on pay days and an alphabetical set of letter boxes for mail. In the same building is the small office of the Company Commander where judgments are meted out to offenders and delinquents, for we're in the army! Back of this small office is an attractive room used as an officer's lounge and mess. Back of the office building is a Y. M. C. A., barracks, provided by the "Y" and having a small stage with footlights, a piano and phonograph, table and benches for reading and writing. Here is also the canteen or company store and a barber shop. In this building entertainments are given either gotten up by the Company (and some splendid vaudeville has been given by the Company) or provided by the Y. M. C. A. Here band practice and concerts are held, for Company — started a band of thirty pieces shortly after arriving in France. This band has now been made the battalion band. Company — also started at Camp American University, the first and only fife and drum corps in the — Engineers. The large mess hall, with tables and benches provided for some 225 men is well screened, and being at a permanent camp the men eat from real tableware, and not from the time-honored and useful mess kit. Near the mess hall is a well-screened meat house and a vegetable cellar.

Back of the mess hall is a building used for sleeping quarters by night crews. Nearby is a small building containing a store room for quartermaster supplies (clothes, shoes, leggins, etc.) and a room used as the sergeants' mess, a great convenience and comfort to the non-commissioned officers, Company — being the only Company in the battalion to have a sergeants' mess.

Across from the mill is the store house for mill and blacksmiths' supplies, a carpenter's and blacksmith's shop being in the same building. Beyond and out at the extreme edge of the camp site are the barn and hay sheds and nearby the small garage for motor equipment.

"TIMBER!"

And this time its far from home in the maritime pine forests of France, that the old familiar cry rings out.

On the side of the camp are the long rows of pyramidal tents for the men, each with floor and bordered-up sides, bunks, a Sibley Stove and electric lights. A water tower and tank provide 8 shower baths and a tank for washing clothes. The first line of tents in the company street is" Sergeants' Row" and occupied by the fifteen sergeants of the company.

Beyond is "Officers' Row," small 7 x 7 tents with floors, boarded sides, cots, stoves and electric lights.

With the heavy underbrush and the general dryness of the region for several months during the year the danger from forest fires is great. Every precaution has been taken well in advance of the season to see that no fires get started or if started accidentally that they are put out at once. A fire plan was drawn up before the danger season, just as is done each year for each of the National Forests in the United States. Little did I think when drawing up fire plans as an American forest supervisor for the past eight years that in 1918 I would be making one for a forest in France!

The mill and other buildings are supplied with water barrels, buckets, pyrenes and a fire hose, and daily inspections are made of this equipment to see that it is

in readiness at all times. No smoking is allowed in the mill or barn. Large "No Smoking" signs being placed at all entrances. There is a small fire tool house near the mill and a sergeant in charge as Camp Fire Chief and another as Woods Fire Chief. Along the logging railroad are fire tool boxes and an improvised speeder was constructed by one of the Motor Squads which patrols the right of way after each trip of the Dinkey Engine over the logging road. The men were carefully instructed regarding the danger from fire and are allowed 10 minute smoking periods twice daily during which time they come out of the timber and the mill to smoke. Although there have been a number of accidental fires started, mostly by the Dinkey Engine, Company—has had none but Class A fires (one-half acre or less burned over) which is rather good evidence that the fire plan and the precaution taken have been fully justified.

NEAR OUR LUMBER OPERATIONS IN FRANCE

These are Spanish laborers from a munitions plant nearby, making charcoal out of slabs.

LOADING UP

And they stopped and posed to have their pictures taken. Even the horses look self-conscious and shy!

If a soldier has near relatives who are dependent on him for a livelihood, Uncle Sam requires him to make an allotment of at least one-half of his monthly pay to this relative. He can allot more than this proportion if he so cares, or he can allot a part of this pay to a bank, relative or friends, in case he has no dependent relatives. The average monthly allotments for Company — ran around $2,386, which for a year, would be $28,632.

Another wise provision is the deposit system. Under this section a soldier can if he so desires deposit any amount with Uncle Sam, which amount is kept for him until he receives his discharge from the Army when the amount is returned to him plus four per cent interest. This deposit may be in any amount, and its just as if a soldier went to a bank and deposited the money. He can deposit any amount, each month, or any month. Monthly deposits for Company—have averaged some $900 per month, or for a year would amount to some $10,800. Some thrifty souls have not missed a month since last September, one soldier having something over $600 on deposit to date, which, at four per cent, will be a nice little nest egg for him when he receives his discharge papers from your Uncle Samuel.

It was stated to me by officers having charge of the of the War Risk Insurance and allotments and Deposits that Company — had as good a record if not the best record for total amounts of any Company coming under their observation.

Men must play, as well as work, and all forms of recreation are encouraged in this war game. Last fall, the battalion had a

THE COMPANY MILL

This shows the sawmill and log skidways, after four months in operation.

football team, organized and coached by a lieutenant, formerly Yale crew and football man. With the coming of spring a volley ball court was laid out and has proven extremely popular. Basket ball and "horse shoes" are popular in the company. The baseball season opened on Washington's Birthday when a team from the Battalion won a badly contested game with a Battalion from our sister regiment. Company —— has the champion baseball team of the Battalion having yet to lose its first game, having won from all the other companies in the Battalion and several games from the Canadians.

A field meet on Decoration Day and a meet with aquatic sports on July 4th were features of the recreational program. The Y. M. C. A. during the year has provided an excellent series of concerts and entertainments, the entertainers oftentimes being theatrical stars—for example, Elsie Janis, who made her usual hit.

As is well known, the—Engineers is made up of volunteers, men who came into the war game to help beat the Boche, in a line of work for which they were best fitted. Many of the men of Company——are married or have dependent relatives that must be cared for. A splendid record has the company along this line. At the time of my leaving the company its strength was 247 men and of these 240 men had taken out War Risk Insurance to the value of $1,891,000, or an average of something like $7,879.16 per man. The following table may be of interest showing the amounts:

| Number of Men. | Amount of Policy. | Total. |
|---|---|---|
| 10 | $2.000 | $20,000 |
| 8 | 3,000 | 24,000 |
| 4 | 4,000 | 16,000 |
| 67 | 5,000 | 335,000 |
| 1 | 6,000 | 6,000 |
| 7 | 7,000 | 49,000 |
| 4 | 8,000 | 32,000 |
| 1 | 9,000 | 9,000 |
| 138 | 10,000 | 1,380,000 |
| 240 | | $1,891,000 |

An occasional airplane sails over the camp but aside from this, the news in the daily papers and the rush lumber orders that come in, it is difficult for the men to realize that they are a part of the A. E. F. and serving their country just as truly as though they were in the front line trenches. In spite of this the morale of the men of Company —— has been excellent, and it is not easy to do good and faithful work day after day when you are miles and miles away from the big guns and the fighting, when you want to get into the big game, and make a try at going over the top. The men of the Forestry Regiments deserve a world of

Underwood and Underwood—*British Official Photograph*

"PERSHING'S PUSHERS" HOLDING UP THE HUN

These men are busy wiring fallen trees across a canal to hang up the enemy—a difficult and unpleasant job.

credit for faithfulness and enthusiasm in their daily work behind the lines, a work just as necessary in the war as mopping up a trench or going over the top.

Speaking personally and a bit frankly, because I am no longer connected with Company —— and because I know the personnel of the company, so well, I can say with considerable pride that the men of Company —— have gone "Over the Top" so far, many times, and that they can be counted on to do so again and again, jusqu'au but!

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# DONATIONS TO THE WELFARE FUND FOR LUMBERMEN AND FORESTERS IN WAR SERVICE

**AMERICAN FORESTRY will publish each month the list of those making donations to this fund. Many of the donations from members of the American Forestry Association so far received were made without solicitation and were inspired by reading in the magazine that a relief and comfort fund for men of the forest regiments was being collected. Many substantial contributions are being received from the Forest Service and from lumber companies and lumbermen following requests sent to them by the Secretary of the Welfare Fund for Lumbermen and Foresters in War Service, by the lumber organizations of which they are members, and by the committees of lumbermen which had charge in various sections of the United States of securing enlistments for the forest regiments. Contributions should be sent to P. S. Risdale, Treasurer, 1410 H. Street, N. W., Washington, District of Columbia.**

**Contributions to the Welfare Fund to November 1, 1918, are as follows:**

| | |
|---|---|
| Previously acknowledged | $20,513.06 |
| The Biltmorean | 5.00 |
| Blackman, W. R., Los Angeles, California | 3.00 |
| Dunham, Miss M. V., Chicago, Illinois | 100.00 |
| Hayes, Mrs. R. P., Asheville, North Carolina | 10.00 |
| Johnson, Miss Elizabeth, Pasadena, California | 5.00 |
| Maddox, R. S., Nashville, Tennessee | 5.00 |
| Morris, John B., Saugatuck, Connecticut | 10.00 |
| Nelson, Jr., John M., Endeavor, Pennsylvania (N. P. Wheeler, Jr., District No. 3) | 5.00 |
| Peters, J. G., Washington, District of Columbia | 5.00 |
| Schreiter, Henry, New York City, New York | 5.00 |
| Stadtmiller, L. R., Hankow, China | 15.00 |
| Wiggin, Mrs. H. C., Cloquet, Minnesota | 3.00 |
| Total | $20,684.06 |

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## IMPROVE YOUR WOOD-LOT WHEN CUTTING FUEL—TREES TO LEAVE AND TREES TO TAKE

IN cutting firewood for this winter's emergency fuel supply the operation should be undertaken with the double purpose of furnishing heat and improving the farm-wood lot at the same time. The United States Department of Agriculture has issued a brief statement which tells what trees to leave and what to cut.

It recommends that the trees be marked for cutting now while the leaves are on them, even if other farm work prevents the actual felling until later, because it is easier to tell the different kinds by the foliage than by the bark. But the cutting should be done as soon as possible if the firewood is to be used this winter, so there will be some time for the wood to season.

In the New England and Middle Atlantic States the following kinds should be left standing to furnish lumber, except in the case of individual trees that are crooked, knotty, diseased, or defective; white pine, red spruce, balsam, chestnut, white oak, red oak, hard maple, yellow birch, tulip poplar, white ash, hickory, and basswood.

The trees of less value for lumber, or slow growing, and which should be cut are: Hemlock, arbor vitæ, black oak, scarlet oak, red maple, beech, gum, elm, gray birch, and ironwood.

In Ohio, Indiana, Illinois and Southeast Missouri save: Yellow poplar, black walnut, red gum, white oak, red oak, cuttonwood, hickory, white ash, hard maple, and basswood.

In these States the trees to be cut from the farm woodlot for firewood are black oak, red elm, beech, and red maple.

In the northern parts of Michigan, Wisconsin, and Minnesota the trees to be saved for lumber are: White pine, red pine, aspen, yellow birch, basswood, red oak, white ash, and hard maple.

Farmers in the northern section of these States may well cull out for firewood and thus improve the value of their lumber stands the following trees: Jack pine, hemlock, scarlet oak, black oak, elm, and beech.

In the southern portions of these Lake States—Michigan, Wisconsin, and Minnesota—farms would do well to save: White oak, red oak, white ash, basswood, hickory and hard maple.

The trees that may be removed for fuel in the southern farming section of these states are: Black oak, red elm, and beech.

# THE FUTURE OF WAR GARDENING

BY CHARLES LATHROP PACK

PRESIDENT, NATIONAL WAR GARDEN COMMISSION

AFTER-THE-WAR food needs must be regarded as no less vital than those with which conflict has made the world cruelly familiar. Authorities are in full accord that the cessation of warfare must needs give even greater emphasis to the food requirements of Europe and America. They are also agreed that there must be no let up in food production and food saving.

Europe's food problems of peace cannot fail to be of extreme gravity. In reclaiming vast areas of country which have for years been in the hands of the enemy, France and Belgium have also reclaimed the vast population and assumed the burden of feeding hundreds of thousands of starved peoples thus restored to the rights of citizenship.

This, of itself, would be enough to intensify the food problem of these countries. To this must be added the vital truth that no increased production can be expected in France and Belgium during the first year of peace. Restoration will be long and laborious. Food Administrator Hoover has stated that there will be seven years of food shortage in Europe following the declaration of peace. His statement is in no wise exaggerated, and this condition must be fully recognized in working out the world's food problems.

An added factor is that the population of Germany must be reckoned with. After war-time starvation the German people will make demands that will have direct and serious bearing on the food question. We may not have to feed Germany as we feed France and Belgium, but in one way or another we will have to face the demand from this source. One phase of the German demand will be the buying of foodstuffs in the European

PRIZE WINNING GARDEN OF THE EASTMAN COMPANY

The Camera works of the Eastman Kodak Company, at Rochester, carried on a systematic war garden campaign and followed it with a campaign to can and dry the surplus produce. This is the prize winning garden of one of the employes. Hundreds of such plots were planted and is an example of what business concerns throughout the country have done to induce the workers to produce more food f. o. b. the kitchen door.

markets by wealthy Germans. The war has made many people in Germany extremely rich. After years of privation these people will enter the open markets of the world to buy heavily of foodstuffs regardless of price. This cannot fail to create a heavy drain on the food supply.

Russia, too, must be taken into account. Evidence is at hand indicating a serious food famine in that disrupted country during the next few months. This will prove a mighty factor in complicating the food problems of the world. In all these problems, the United States must regard itself as carrying the full burden of responsibility. It is a burden that no American is willing to shirk. Europe looks to us for food and must not look in vain. The war has given us a full realization of our duty to other nations. With peace this duty must be even greater than before.

Along with other business that of feeding the world has undergone significant and vital changes with the passing of the years since Germany forced Belgium to the point of starvation and spread desolation and death from hunger and famine through Poland, Armenia and other helpless dependent nations. Women have taken their places on the farms, doing all kinds of work there, just as they have in other branches of industry. New methods for increasing the yield of the land, including especially the application of more power through machinery, have been applied. Means for getting the produce from the farm to the urban consumer have been improved, the extension of the rural delivery system and the utilization of motor trucks having been the chief factors in this step forward. Various organizations for helping the farmer in harvesting his crops, such as the Woman's Land Army and the United States Boys' Working Reserve in this country and other bodies abroad, have furnished a certain amount of assistance in solving the food problem. Some of these war-time plans of operation will be continued. They have been found to be practical and valuable. Furthermore, some of the improvements in farm life will make agriculture a more desirable occupation in the future than it has been in the past, in many instances, so that many returning soldiers may find it desirable to take up this method of making a living.

There is no other single business born of the war which has affected a greater number of people than that of war gardening. More individuals have engaged in it than in any other line of work through which they have been called on to help in the crisis. Starting from a mere nothing before the United States entered the war, this form of activity grew in less than two years into a new occupation which counted its numbers by the millions and, in the statistics of labor employed, exceeded any other branch of gainful employment with the exception of actual farming itself.

SOME STORES TOOK A DOUBLE SHOT

Many were the ideas used in war garden windows, but this one by Goldenberg, of Washington, District of Columbia, took a "double shot" in food conservation and devoted half the window to food production and the other half to food saving.

The fact that such a vast number of American citizens took up this work shows that they appreciated the merits of it, and is one of the reasons for the confident prediction that war gardening has come to stay. As the great poet said of his writings, it is something "the world will not willingly let die." Home food production will continue because it has been found worth while; and all the things which this war has proved to be of value and benefit to mankind will last. The practical lessons learned, as well as the greater Freedom, the more perfect Justice and the truer Democracy born of blood and battle, will remain to bless the world.

War Gardening will establish itself as a peace meas-

ure almost equally valuable with its war-time aid. This will be true at all times, but more strikingly so during the first five or ten years of the great reconstruction period. The food problem then will be of pressing importance. It will be on a par with many of the other enormous reconstruction problems that will face the world. It will require the continued application of broad thought and effort. There will be no let up in the demand for food; in fact, it will be greater than during the actual days of the conflict.

One of the great helps which the war gardener will have again next year to assist him in his labors will be the Daylight Saving law. This measure met with universal approval in the United States during the first season of its operation in this country; and the gains therefrom were of inestimable benefit in the nation's war preparations. The first seven months of trial proved its value. The law as enacted by Congress last spring provides that it be in effect "each year;" so that the clocks will be turned ahead again an hour on the last Sunday of next March and remain so until the last Sunday of the following October.

SHOW WINDOWS AIDED IN CAMPAIGN

Every store in the country had a war garden window and this valuable space was given over to demonstration gardens. At many of these stores the garden books of the National War Garden Commission were given to customers. Bigger display plans for next year are now under way. This window is by Brager of Baltimore.

MODEL GARDEN AND MODEL COSTUME

Two model gardens were marked out for the "city farmer," by Woodward & Lothrop of Washington, District of Columbia. The famous "Sow the Seeds of Victory" poster, made for the National War Garden Commission by James Montgomery Flagg, were used as part of the decorations. The "gardener" in the picture is shown with the approved garden costume of the "soldiers of the soil."

The National War Garden Commission which took an active part in urging the passage of this progressive legislation feels that it has cause for gratification in the results accomplished. The extra hour of daylight gave the home food producers a vast total of extra time for their work and added many millions of dollars worth to the value of their product.

In summing up the benefits gained from the law this year, Senator Calder, of New York, author of the measure, emphasized particularly the help it had been to war gardeners. In a statement which he has made he said:

"The Daylight Savings Law which became effective on the last Sunday in March has more than fulfilled the prophecies of its advocates. It has really turned one hour of night into day. People live by custom. They rise in the morning by the clock; they eat their meals by the clock, and go to bed by the clock, so that during the time this law has been in operation a vast majority of the people of this country have been awake one hour more of daylight and asleep one hour more of dark than they were formerly.

"This additional hour of daylight has been most helpful to the men, women and children of the nations who have taken advantage of it to plant war gardens, thereby not only relieving the strain upon the farm but to a very considerable degree tending toward economy in family expenditures. It has also saved in gas and electric light bills not less than ten per cent of the money formerly spent for this purpose. In addition, it will during its seven months of operation this year save at least one million tons of coal. It has afforded in the construction of cantonments for our Army, in the manufacture of munitions and war supplies of every character and in the building of ships one hour more of daylight for the men engaged in these industries.

"It is a universal practice for working men and women to begin their day's labor at eight o'clock and in some industries, at seven o'clock in the morning. They can-

not be induced to work before seven o'clock, but with the long evening, produced by this law, those whose labor have been induced to work additional hours at night where the exigencies of the occasion demanded it. Without question this bill has been more helpful in the great war work in which this nation is engaged than any other one thing."

The coming of peace means the release from a bondage of shortage and suffering of hundreds of millions of peoples who have been compelled while war shut their harbors and checked their commerce, to shift as best they could on short rations. The starvation of millions of human beings was the result. The lifting of the ban with the cessation of battle and blockade brings into the market for food supplies countless millions who have been denied sufficient daily bread for years. With a steady demand from such sources years will be required scanty mouthfuls of this necessity because of the impossibility of reaching them on account of German blockade or because of the knowledge that the food if shipped to them would in all likelihood fall into the hands of the Central Powers.

Just as they have been doing during the war, therefore, war gardens must continue their merciful work of helping to supply the food needs of the world. They will be called on to add as much as possible to their productive capacity because of the new mouths to be fed. It is estimated that there are more than 100,000,000 people who will be included in the number of those to be helped in this way. War Gardening assumes a new phase and a new motive, therefore, in this service it must render. It is offered a new opportunity to show its power to help. There is no question but that the war gardeners, realizing this high need for their work,

*Photograph by Western Newspaper Union*

THE COMMANDING GENERAL HELPS PICK BEANS

Like all good generals Hugh L. Scott does not ask his men to do anything he would not do, so the commander at Camp Dix does a little plain and fancy string bean picking for the "soldiers of the soil." In the meantime Charles Lathrop Pack, president of the National War Garden Commission (just back of General Scott), tells Dr. J. H. McNeil, of the New Jersey State Department of Agriculture, that they are mighty fine beans.

before the food stocks of the various nations can be restored to anything like a normal condition and before some surplus can be established in their warehouses which will prevent the possibility of famine. The United States and the Allied nations will have before them an immense task during the busy reconstruction days. They are to be called on not only to feed their own people, but those of many other nations. Their own workers who will be occupied with the rebuilding of thousands of ruined cities, towns, docks, railroads, bridges and with a hundred other big tasks, must be fed. In addition as much food as can be spared must be sent to those oppressed peoples who have been denied more than will continue to labor as they have in the past to supplement the world's food supply.

But it is not only the new peoples of the world who will make the increase in food production necessary. Great quantities of supplies will be just as essential in the other countries, in France, England, Italy and the United States, where immense after-the-war tasks are waiting to be done. The release of millions of soldiers from the battlefront will not, like the waving of some magic wand, bring about an immediate re-establishment of pre-war conditions as far as food is concerned. Some of these men will reutrn at once to the farm; others will be help in other ways; but the vast majority of them

will remain in the cities and towns and they will require food then as much as if they were still in the trenches. It is not to be expected that there will be any great flocking back to the farms, and the farmers will be short of help as they were before. It will not be possible, therefore, to look for any large increase in the quantity of food produced on the farms. Broad plans are being made in the United States by Secretary of the Interior Lane to provide land which can be reclaimed for settlement and use by the soldiers. This back-to-the-land movement is probably the biggest that has ever been attempted and if it is carried out successfully will add to the wealth of the country by putting much of its idle swamp, arid and other waste land to work. It is figured out that there are considerably more than 230,000,000 acres of unappropriated land which could be made to yield valuable crops.

But this other back-to-the-land movement—that of war gardening—is an accomplished fact. It was established simply and without any disturbance of existing social, political or economic conditions. For a decade or two before the war there was deep study and much discussion of the problem as to how to check the exodus from the farm to the city. There was a steady drain cityward. Argument and discussion, however, availed nothing; and the exodus continued. In the "city farmer"

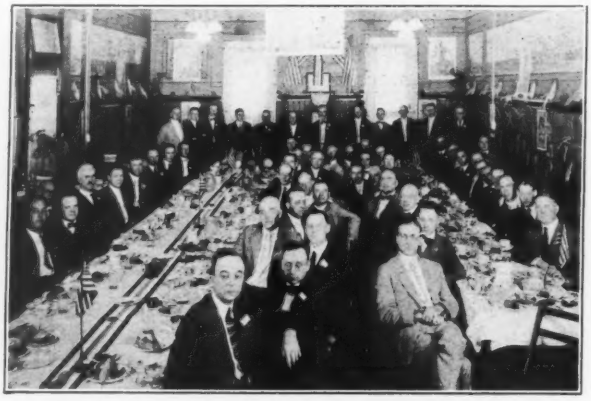
*Photograph by Paul Thompson*

YES, THEY HAVE APPLES, TOO, AT CAMP DIX

Gen. Hugh L. Scott samples the apple crop of the demonstration garden at Camp Dix for which the National War Garden Commission gave the seed and implements. Next to General Scott is Charles Lathrop Pack, president of the Commission, discussing with S. W. Hartley, of the Motor Transport Corps, the value of food f. o. b. the kitchen door.

has been found the true answer to the stay-on-the-farm idea. The ambitious young man or woman will not remain in the country where comforts are denied them and where advantages of education and social life are few; but they will be glad to "farm" in the city. The war garden has opened the way. By this means almost everyone becomes a food producer.

Increasing prices will make it desirable to the individual, and the growing demand of the nations will make it desirable from the country's point of view, that everyone help to feed himself. The readjustment which must come out of the war will call for Herculean powers as great as those which it has been necessary to put forth during the terrible struggle against the materialism and militarism of Germany. This reconstruction work, therefore, will call for every bit of manpower that can be spared. It will be a question not of months but of years before this upbuilding has been completed. In France and Belgium and Poland and Italy and Russia and other European countries the rebuilding of cities and churches, railroads and bridges, docks and roads; of houses and barns; the remaking of trench-scarred and shell-torn farms, and many other big works must be performed. But elsewhere there will be required much new work.



*Photograph by Beitler*

MARION CLAIMS THE CHAMPIONSHIP

The Kiwanis Club and the Boy Scouts, at Marion, Indiana, got together to see what could be done, and as a result Marion claims the war garden championship of the universe. Lewis de Wolf reports to the National War Garden Commission one garden to every two people. The picture shows the luncheon tables at which the season end was celebrated. The affair was strictly a war garden luncheon.

In the United States, for instance, thousands of miles of road which have been given the hardest kind of usage with nothing more than the most superficial repair, will have to be completely rebuilt. The day of the heavy motor truck as a means of transportation between city and city has come to stay, and with it there must be a strengthening of roads. This is one of the great tasks awaiting the returning army of men from the battlefield. The construction of new buildings in our cities which has been checked on account of war-time need of material and men, must be resumed and lost time made up. Cities will need many improvements which will keep the workers of the world busy. In these and a hundred other ways there will be steady call for the men released from strictly war work.

"EVERY INCH PUT TO WORK"

This is the garden of an employe of the Eastman Kodak Company, at Rochester, and gives a fine example of what can be done with little space. Here every inch of the side yard has been put to work.

These facts point to the increasing value of the war garden. It will be just as important a factor in the life of the nation and the community after the war as it has been during the war. This need will last for many years; and by that time the value of the project will be so firmly established as a peace measure that it will continue indefinitely. It

*Photograph by Paul Thompson*

THEY HAD GARDENS IN NEW YORK CITY TOO

Here are school children in Thomas Jefferson Park, New York City, harvesting the war garden crop. This garden is along the East River at 114th Street.

will have become a habit fixed and firmly implanted in the hearts and lives of the people of the country.

It is a habit which makes for better living all around. It brings health and wealth to the individual; it creates a more friendly and more democratic community feeling; and it adds to the moral strength and the material resources of the nation. Everything possible must be done to encourage and spread the growth of a habit such as this. On that account the pioneer work which has been done by the National War Garden Commission in the two seasons since the United States has been in the war, must be continued and expanded and intensified. There must be no let up in the progress which has been made.

Gardening has been found to be a health measure. It has been used in the rehabilitation of convalescent soldiers. Around the hospitals in Europe almost since the beginning of the war vegetable plots have furnished the means for providing easy and pleasant outdoor work for the men which acted as a tonic to their shattered nerves and a bracer to their recuperating bodies. Similarly at the hospitals and army camps in the United States this form of activity was employed to help in the rebuilding of disabled and convalescing soldiers. In the great reconstruction work carried on at Walter Reed Hospital which lies in the outskirts of the Nation's Capital a fifteen acre war garden proved of much therapeutic value in the treatment of men suffering from various diseases, including war neuroses. In addition to helping them to regain their health and strength, it is training these men for the future and equipping them to make their own living and become valuable citizens of any community after they are out of active service. Part of the large

FIRST WINNER OF NATIONAL CAPITOL PRIZE CERTIFICATE AWARDED TO BLUE RIBBONS BY NATIONAL WAR GARDEN COMMISSION IN CO-OPERATION WITH COUNTY FAIRS

"We got all our vegetables from our garden, 100 x-150, this summer, canned 125 jars and stored 25 bushels of potatoes. This is the message sent to the National War Garden Commission, of Washington, by Mrs. Frank P. Brown, of Cincinnati, Ohio, who was awarded a National Capitol Prize Certificate for her canned vegetable work. This National recognition, Certificate No. 1, is the first award made by the Commission to blue ribbon winners "cited" as worthy of National recognition by local fair committees all over the country. The Commission is offering certificates and ten thousand dollars in THRIFT STAMPS to such local prize winners.

war garden at Camp Dix, New Jersey, adjoins the base hospital and potatoes and other vegetables were growing during the season of 1918 right up to the sun porches on which some of the invalids had to sit in their wheel chairs.

Sailors cannot grow vegetables at sea. They would hardly find it possible to cultivate a war garden on a wave-washed battleship or a swift-speeding destroyer. But to overcome this handicap a movement was started throughout the United Kingdom to give these men a supply of fresh vegetables whenever they get to port. Navy vegetable rations consist of potatoes only and a few other dried of canned products which can be kept a long time and stored in small space. On this account an organization which soon had 800 branches and collecting depots throughout the United Kingdom was formed to provide fresh vegetables for the men of the grand fleet. Headquarters were established in London, with Admiral Lord Beresford as president and the patrons included many prominent people, but its members rank from the owners of large estates who contribute regular supplies weekly to the small schoolboy whose labors on his 10-foot plot aggregate whole. It was not long after the work got under way before a weekly average of 300,000 pounds of fresh vegetables and fruits were being furnished to the British Navy, which meant a distribution of about one and a half pounds per week per man. In speaking of this work and its value, Rear Admiral Lionel Halsey, third sea lord of the Admiralty, said:

"Those associated with the Vegetable Products Committee can happily feel that this work is of priceless value, for without a vegetable food the men of the fleet could not have so thoroughly performed their work in the past; nor will they be able to do so in the future without a continuance of this splendid work as effeciently and as generously as in the past. Its value may be realized when it is stated that these supplies are an invaluable factor in keeping the men in good health and fitness."

What is true in the case of the stalwart men of the British Navy is true of all other members of society, of high and low degree. There is need for vegetable food. The body is kept in better condition if it does not depend too largely on a meat diet. War gardening will add greatly to the proportion of greens which will enter into the diet of the American people. It is well that this is so, for with the steady rise in the price of meat it is one

THEY CAN THE KAISER AT THE CAMERA WORKS

Miss Tillie Baldwin won the blue ribbon for this work and was awarded the National Capitol Prize Certificate by the National War Garden Commission. Not only did employes of the Eastman Kodak Company make some new records in war gardening, but they held a county fair and had competitions for the best canned vegetables.

of the important factors which will help the average American family to economize on the market bills. The value of this saving will make itself felt in a hundred directions. The individual will be able to provide for himself and his family some of the comforts and advantages which he would be compelled to forego were it not for the saving he has affected through his back yard vegetable plot. This saving enables him to procure for his children added educational advantages, and for the entire family some of the home enjoyments which are so vital to the continued happiness and the ultimate welfare of a nation. The future of war gardening, therefore, is assured. It is such an important economic gain and its benefits in other ways are so numerous that the army of home food producers themselves will be its own strongest and most ardent champions. Both by practice and by precept they will continue to spread the gospel of "food f. o. b. the kitchen door." Just as the army which has fought for justice, democracy and equal rights of mankind will see to it that these principles are maintained in every part of the world, so the soldiers of the soil in city, town and village, millions of whom have tested the worth of war gardening, will be its future champions and defenders.

WHILE THE FLYERS DODGED IN AND OUT

The Pennsylvania Railroad conducted a division to division garden campaign and placed war garden primers of the National War Garden Commission in the hands of every superintendent and thousands of its employes. This garden is on the Tyrone, Pennsylvania, division and the smoke of a passing train may be seen at the right.

## "WALNUT TREE PLANTING DAY"

FRIDAY, October 18, was officially designated in a proclamation by Governor Brumbaugh of Pennsylvania as "Walnut Tree Planting Day." The Governor urged school children, boys and girls scouts, sportsmen farmers and "other well disposed citizens" to plant on that date.

The proclamation called attention to the great importance of black walnut wood and to the scarcity now existing, while it also referred to the value of the nuts for food for game and to the shade properties of the tree.

Planting of both black and white walnut trees is urged "to the end that we may always have in this commonwealth a generous growth of this most useful tree, thus insuring to the nation and to industry necessary lumber, to the wild life in our forests a generous supply of food and to the people the blessing that attends the planting of trees—generous shade, pure air, regulated water supply and spiritual administration."

## PLANT TREES AND SAVE TAXES

CAN you imagine living in a taxless city? But there really are such places. For instance: There is Orson, in Sweden. The municipality has its ordinary city expenses, but it imposes no taxes. Moreover, the local railway is free to every citizen, and there is no charge of telephone service, schools, libraries, and the like.

All this is due to the wisdom of a former generation, who planted trees on the available ground, with the result that during the last thirty years the town authorities have sold over £100,000 worth of young trees and timber, while judicious replantings have provided for a similar income in the future.

Then there is Montmarlon, in the Midi, France. Here not only are there no taxes, but the timbers on the communal lands are sufficient to grant each person a small annuity.

**The man who would like to burn coal because it is easier and handier, but who thinks enough of his country and the boys over there to shoulder his ax, brave the winter wind, and go out to cut wood in order to save coal, is helping to win the war.**

**Methods of cutting cordwood are discussed in a circular, "Emergency Fuel from the Farm Woodland," issued by the United States Department of Agriculture to aid farmers in helping to meet the fuel shortage.**

WHITEWATER FALLS IN THE SAPPHIRE COUNTRY "LAND OF THE SKY"

This beautiful waterfall, three hundred feet high and with a spread of over seventy-five feet, lies in the heart of the new lumbering project in North Carolina.

# NORTH CAROLINA'S CONTRIBUTION TO THE WINNING OF THE WAR

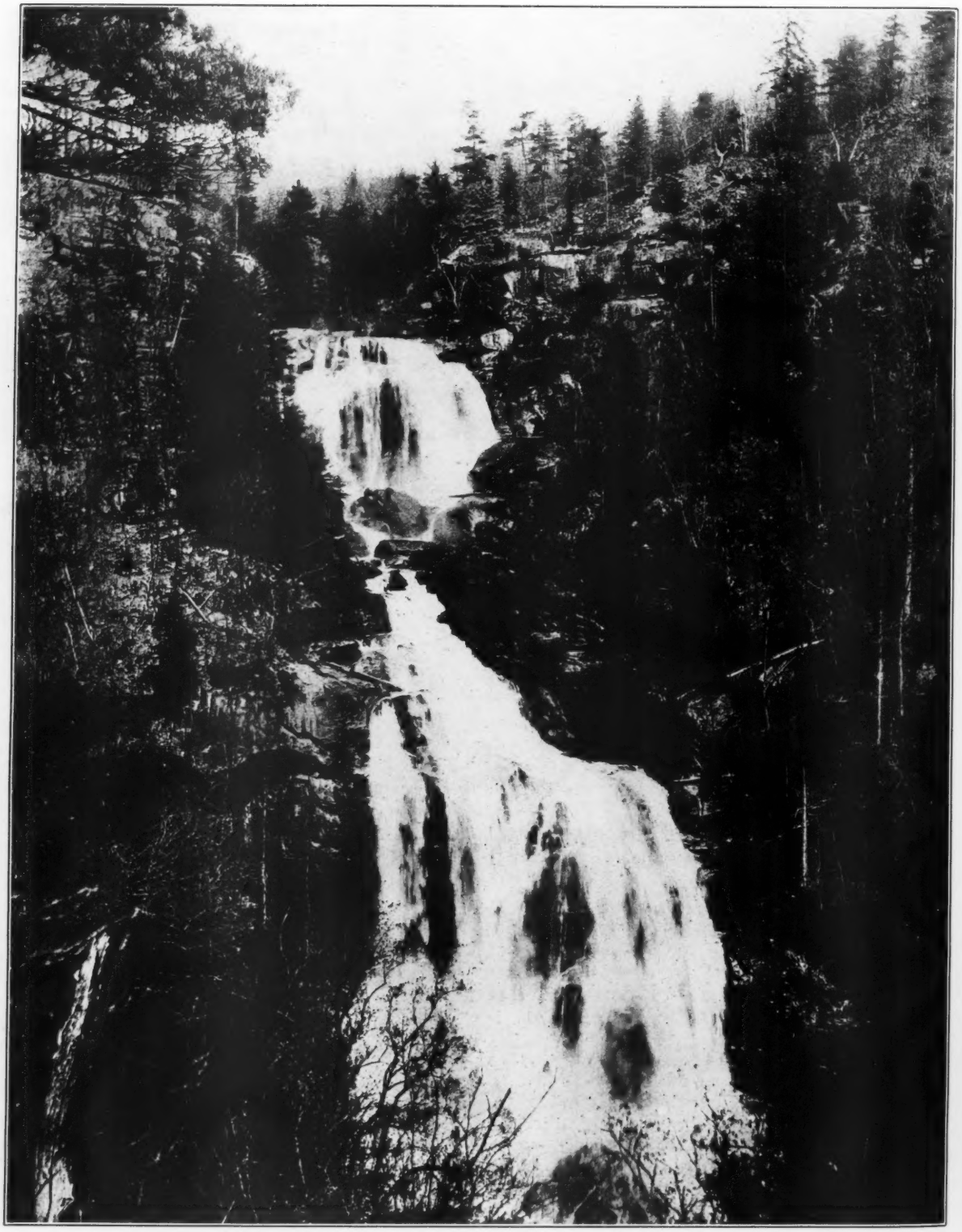
BY CRETE HUTCHINSON

AT THE present time the Railroad Administration is facing a serious shortage in tie production. West of the Mississippi 50,000,000 cross ties are required annually for replacement; East of the Mississippi 80,000,000, with approximately 20,000,000 additional ties for street railways and other industrial needs. A grand total of 150,000,000 cross ties or four billion five hundred million board feet of timber. Six months ago, only forty-five per cent of the amount needed was produced, due to additional requirements for transportation of war materials, withdrawal of labor into war industries, the drafting of labor into the Army and Navy and the rearrangement of methods of purchase by the Government control of railroads. The present purchase methods include new cross tie specifications, grading rules, a publishing of prices with power to purchase direct for cash from producers. Against the shortage of 65 per cent six months ago, the present shortage is only 40 per cent and probably will be reduced to 30 per cent by the end of the year due to a better understanding of specifications, general requirements and prices paid, together with the ability to pay cash.

Thirty-four per cent of the timber used by the Railroad Purchasing Committee is white oak. Large areas of the forested section of North Carolina in Transylvania, Jackson, Graham and Clay counties contain this desirable timber and has been obtained through Jonathan Starr of New York for the needs of the Government for the period of the war. In the North Carolina tracts are approximately 152,000,000 feet of poplar; 240,000,000 oak; 120,000,000 hemlock; 32,000,000 yellow pine; 41,000,000 hickory; 50,000 black walnut; 249,000,000 chestnut; 50,000,000 bass; 75,000,000 white pine; 32,500,000 beech and gum, and 10,000,000 feet of locust. The white

MOUNT TOXAWAY IN THE "LITTLE SWITZERLAND OF AMERICA"

One hundred and fifty-two million feet of poplar and forty-nine million feet of chestnut are scattered through the North Carolina acreage acquired for the Railroad Administration for cutting into cross-ties.



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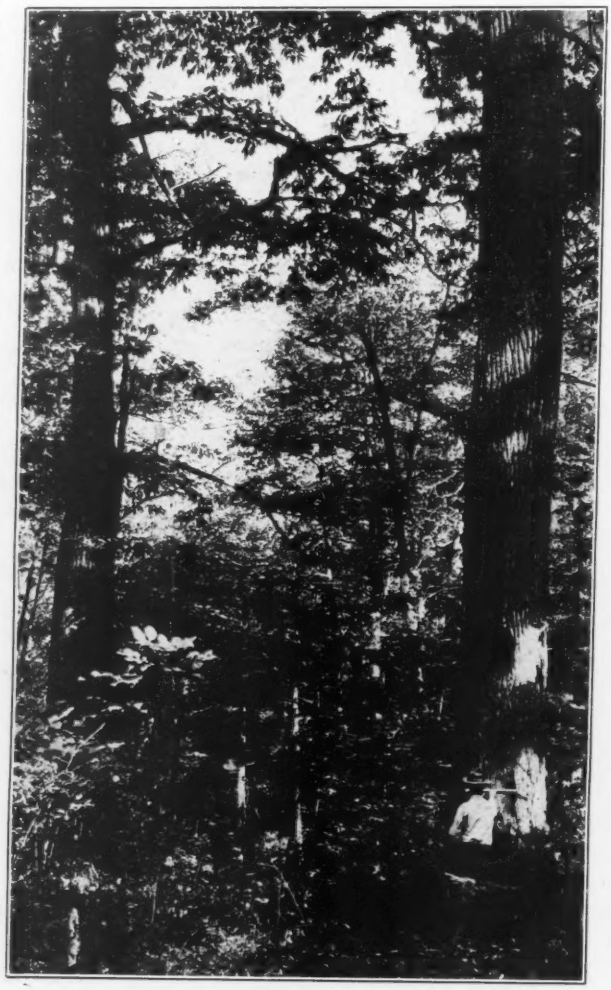
oak, locust and black walnut do not require chemical treatment so are used in a greater percentage when obtainable. The stumpage value of the enormous holdings which Mr. Starr controls is estimated at a minimum of fifteen millions of dollars, all of which will contribute to the winning of the war in speeding up cross-tie production to facilitate the tremendous movement of freight necessary at this crucial time in the affairs of our nation.

The timber resources of the Southern Appalachian range include almost every variety known to commerce, the development of which is absolutely necessary to the carrying out of the stupendous program planned by the Railroad Administration for the betterment of transportation conditions in the South. With the shipment of men to France, we are sending miles of railroad to move them on the other side. It is the hope of the nation that a United States Government and Allied Powers controlled railroad will be laid direct to Berlin. The cross-ties for the foreign program must come from home and are being shipped to France in our new ships at this time. To move the cuttings from the forests of North Carolina, new rails will be laid to convenient points of vantage near the mills, facilitating the conveyance of ties to the nearest points of consumption. The ties for foreign shipment will be routed to the nearest ports and there passed upon by Government inspectors.



IN THE WOODS

This will give a fair idea of the size and kind of timber which will be made available for cross-tie manufacture by the opening of the tracts in the South.

Forty-six miles of railroad to be used for the exclusive use of the Government for the period of the war and as long after as is necessary to complete the present program, will be laid into the heart of Clay and Graham counties within the next few weeks. Cross-ties will be ready for shipment as soon as the rails are in and the movement of this vital necessity to safe travel will begin.

North Carolina will try to contribute every ounce of patriotic manhood, every mill, every stick of timber, to assist in the alleviation of this acute shortage of cross-ties for she has within herself the power to reduce the crying need to an immaterial percentage through her bountiful forests in the Appalachian Mountains. It may be necessary to ask for labor from other parts of the United States for time is valuable and the need is great. At least three thousand men will be needed to fell the great trees and operate the two hundred mills that will be installed within a short time. It is planned to give the men engaged in the work an opportunity to obtain homes in the region cut so that a great enthusiasm will enter into the real work. Trucks will be utilized as much as possible in the movement of the ties from the mill to the railroad; a series of portable mills will be operated in the least accessible areas and roads opened in new sections for the betterment of the hamlets which will undoubtedly grow rapidly with the advent of this big Government business.

Much of the mountainous section of North Carolina is in an undeveloped state and presents an interesting solution to a few of the great problems which must be solved with some degree of haste by the Railroad Administration. In addition to the cross-tie famine there is real need of car timbers, switch-ties, bridge-ties, and other forest products. Every forested part of the United States has been thoroughly cruised for products required in the various branches of the Government and contracts have been placed with producers for the particular commodity which they can contribute to the promulgation of the war. Some excellent virgin timber has also been obtained by Mr. Starr in Georgia, but the largest acreage that will produce the greatest amount of cross-ties is in the sublime and untouched confines of North Carolina.

In the Sapphire country, Lake Toxaway, fifty thousand acres have been obtained, an irresistable lure to the operating lumbermen. Giant oaks, lordly poplars, great cherry, walnut, ash and hickory are scattered in profusion in an untouched state with the "Whitewater Falls" as the scenic attraction. This timber is located at the junction of three states, North Carolina, South Carolina and Georgia and contains sticks up to two hundred feet high, from six to nine feet at the stump. The elevation in

this so-called "Land of the Sky" is from two thousand to three thousand feet. Mount Pisgah is adjacent to the property and the accessibility to the Southern Railway, six miles from the Transylvania branch, adds value when haste in production is so essential. The ties will be loaded at Lake Toxaway Station, until a few years ago one of the wonderful resorts of the South, the "Little Switzerland of America." It has been in a dying state since the flood and is in dire need of the development which is now a part of the Railroad Administration plans. The station will become a natural shipping center for the distribution of cross-ties.

In the Hiawassa Valley section, from Andrews to Haysville in Clay County, twenty-five miles of road have been graded by Andrews Township and Clay County and are ready for the rails recently granted by the Railroad Administration. These rails would have been laid sometime ago but for an injunction served by the citizens of Andrews on the town restraining the sale of bonds. This matter was finally adjusted but too late as

THE BEAUTIFUL HEART OF THE SAPPHIRE COUNTRY

It is here that beauty and utility meet in the service of the Government. By the end of the year it is hoped the present shortage of cross-ties will be greatly reduced by the development of North Carolina's as yet untouched forests.

we were then at war. Now the grade paid for by the county is to be used exclusively for the movement of cross-ties. In Western North Carolina peaks and ridges of the Appalachians form a magnificent skyline and, in part, constitute the dividing line between the streams flowing into the Atlantic Ocean and those which make their ways to the Gulf of Mexico. The timber of this section has attained international fame and will be distributed in the form of cross-ties, car timbers, bridge-ties, etc., in the war torn countries of Europe as well as in the United States. The valleys in the West are not so broad as farther east but contain an abundance of fine timber of great size and unusual height. Particularly is this true of the timber resources along the streams and in the coves, where the quality is exceptionally good, yielding a high percentage of upper grade stock.

TYPICAL OF THE TIMBER TO BE CUT FOR CROSS-TIES

In Graham County, North Carolina, these cross-tie lengths are ready for stripping and will be shipped as soon as the new rails are laid into the properties.

The forested tracts are sparsely settled and of the usual cross-roads type, consisting of postoffice, general store, blacksmith shop and a few dwellings of poor construction. The plans now being prepared for the better housing of the men employed in the mills should prove sufficiently attractive to induce settlers to remain on the land as soon as it is cleared. The Southern Railway has kept close watch over the needs of the industries along its lines and has added materially to the information necessary to the gigantic development of the natural resources of the South. It serves a large section of the lower Appalachian range, and has two lines across the mountains; one leaving the main north and south road to Salisbury, North Carolina, continuing west through Asheville, North Carolina, to a junction with the western, north and south line to Harriman Junction, Tennessee. This western branch runs south to Knoxville, Tennessee.

With the new rails laid into the heart of the big trees and the many huge mills installed the cross-tie famine will be so reduced that little anxiety on the part of the Railroad Administration will be felt by the end of the year.

## CUT WOOD, SELL IT, BURN IT--HELP SAVE COAL

THE coal shortage for next winter, estimated by the Fuel Administration at about 14,000,000 tons, makes it necessary that wood should be used to save both coal and transportation. Country districts and small villages are in position greatly to help coal conservation by burning wood.

Farmers now use on their farms 883,000,000 cords of fuel wood annually. All farms should use it during the war or emergency periods, officials urge.

Any kind of coal stove or furnace can be used for burning wood in a pinch. With a careful attention to drafts and grates, the change can be made with little trouble.

On the average, according to the Forest Service, United States Department of Agriculture, a cord of wood is about equal to seven-tenths of a ton of coal. Two cords of soft wood are required to equal a ton of coal, but a cord of wood from a number of well-known kinds of trees will equal a ton of coal in heating value, and for three varieties — osage orange, canyon live oak, and black locust—a cord has a higher value than a ton of coal. Most of the oaks and hickories, as well as western yew, honey locust, blue gum, sweet birch, and a number of others are the equivalent of nine-tenths of one ton of coal.

The following have a low heating value, but are approximately equal to one-half a ton of coal: Yellow buckeye, black cottonwood, basswood, western red cedar, Alpine fir, Englemann spruce, black willow, balsam fir, Sitka spruce, aspen, and white spruce.

# THE USES OF WOOD

## WOODS USED IN THE MANUFACTURE OF HANDLES

BY HU MAXWELL

**Editor's Note:—This is the seventh story in a series of important and very valuable articles by Mr. Maxwell on wood and its uses. The series will thoroughly cover the various phases of the subject, from the beginnings in the forest through the processes of logging, lumbering, transportation and milling, considering in detail the whole field of the utilization and manufacture of wood.**

AS an all-round handle material, wood has no equal. If handles of moderate weight are wanted woods may be had like cedar, white pine and basswood. If strength is of prime consideration, strong woods are available, such as persimmon, dogwood, maple, birch, beech and hickory. Sometimes weight is essential, though that is the case with small rather than with large tools, and lignum-vitae, live oak, and certain tropical species meet that requirement. Elasticity is a prime requisite at times, combined with toughness, and our forests furnish what is wanted, notably, hickory and hornbeam. Sometimes in using a handle the hand must slip to and fro, as with an ax in chopping, and a wood is required that will polish smooth so that the hand will not be chafed. Many woods polish smooth, but few equal hickory in that particular. Beauty is sometimes, though not usually, considered in the selection of a handle wood. The handles of pocket knives, miscellaneous cutlery, screw drivers, curling irons, and other toilet articles, afford a considerable use for handsome woods. Our forests possess many of fine color and dense grain, among such being cherry, kalmia, manzanita, wild lilac, koeberlinia, walnut, satinwood and devil's claw. All woods, if dry, are poor conductors of heat, and that quality is taken advantage of by handlemakers who fit curling irons, frying pans, corn-poppers, stove lid lifters, pokers, coffee pots, smoothing irons, and other similar articles and utensils, with wooden handles to protect the hand from the heat of the fire.

Woods are tested in laboratories and experiment stations to determine their various qualities, and the handlemaker puts to his own use data so worked out, and he measures his material's strength, elasticity, hardness, weight, and other properties, and determines what woods suit best for various kinds of handles.

WOEFUL WASTE OF HANDLE STOCK

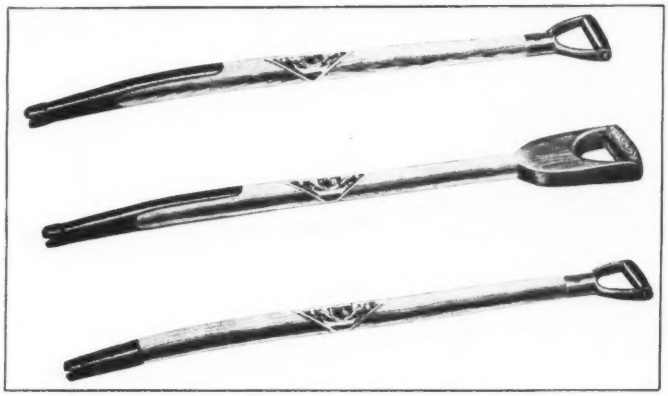
The best hickory handles are made from split billets. Riving the wood offers a guarantee against cross grain, and for that reason is preferred to sawed wood. In splitting operations the waste of wood is regrettable. The picture gives a view of a typical handle camp in a Kentucky forest.

The annual demand for wood by handle makers in the United States approximates 280,000,000 feet, consisting of thirty-three kinds, of which four are softwoods, twenty-three native hardwoods, and eight hardwoods of foreign origin. The number would appear much larger, except that manufacturers follow the custom of grouping several species as a single one. All maples are listed as one, all birches, pines, oaks, hickories, ashes, and cottonwoods in the same way, though each of these includes several trees of the same genus. Nearly all handles are made of hardwoods, their contri-

bution totaling more than ninety-nine per cent of the whole. It is apparent that softwoods fill a decidedly minor place in the industry, only four of them appearing in the list, and not one of them contributing more than half a million feet yearly. The four softwoods and their annual contributions of material for handles are here shown:

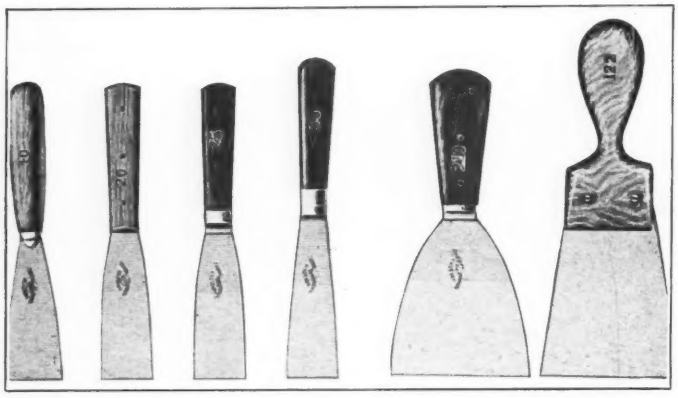
| | Feet |
|---|---|
| Hemlock | 500,000 |
| Douglas fir | 247,200 |
| Cypress | 122,000 |
| Pine | 92,000 |
| Total | 961,200 |

The number of foreign woods entering into our handle trade is rather large, but the total supply is not as great as that contributed by the soft-



HANDLES FOR SPADING FORKS

These handles are known as the "D" pattern, so named from the form of the end grip for the hand. In some styles of handles this grip is of wood wholly, and in others it is partly metal. Short handles only, whether for spades, forks, shovels, scoops, or other tools, have the "D" attachment.



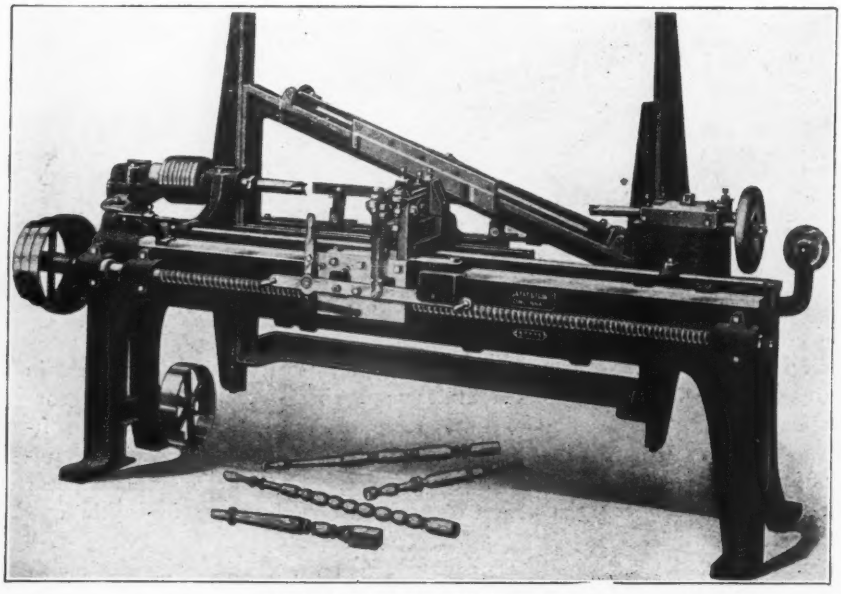
HANDLES FOR PUTTY KNIVES

Some of the knives in this class are equipped with handles of the plainest wood, while others are provided with colored or figured woods, or the handles may be finished with enamel. There is no practical limit to the variety, so far as the kinds of wood, shapes, and finishes are concerned.

woods. The eight foreign species, and the amount of each per annum, are here given:

| | Feet |
|---|---|
| Cocobola | 210,000 |
| West Indies boxwood | 37,556 |
| Mahogany | 29,000 |
| Rosewood | 15,456 |
| Ebony | 4,464 |
| Lignum-vitae | 1,500 |
| Green ebony | 985 |
| Turkish boxwood | 225 |
| Total | 299,186 |

Native woods in the following list furnish the bulk of the handle material in this country. The figures give the yearly production in feet:



GAUGE LATHE FOR QUICK WORK

No matter how curved and irregular a handle may be, a lathe can be made with appropriate adjustments to form the handle. It is thus turned true to pattern and with great rapidity. The lathe represented in the above cut is from the catalogue of the Fay & Egan Company, Cincinnati.

| | |
|---|---|
| Hickory | 120,294,466 |
| Ash | 64,156,872 |
| Maple | 41,238,446 |
| Beech | 16,691,207 |
| Oak | 12,458,472 |
| Birch | 9,908,350 |
| Red gum | 6,654 300 |
| Elm | 3,060,307 |
| Basswood | 2,285,885 |
| Cherry | 617,500 |
| Hornbeam | 415,000 |
| Red alder | 361,700 |
| Yellow poplar | 211,900 |
| Dogwood | 190,230 |
| Applewood | 156,400 |
| Sycamore | 156,000 |
| Black walnut | 29,050 |
| Cottonwood | 27,000 |
| Willow | 19,000 |
| Chestnut | 10,000 |
| Persimmon | 7,000 |
| Locust | 4,000 |
| Butternut | 2,000 |
| Total | 278,954,985 |

Handles may be divided into classes based on shapes, materials, uses and patterns. However, there is overlapping to such an extent that lines separating class from class cannot always be clearly drawn or defined. The difference between a handle for a hatchet and one for a mallet is not great, still the two are not precisely the same in form or in the use intended. Allowing for exceptions and variations in classification, it is practicable to group nearly all wooden handles for tools in six groups, based chiefly on uses. They follow:

1. Agricultural tools for planting, cultivating and harvesting.

2. Edged and pointed tools for working materials sufficiently soft to be cut.

3. Saws, files, rasps and similar tools for scraping, shaping and smoothing.

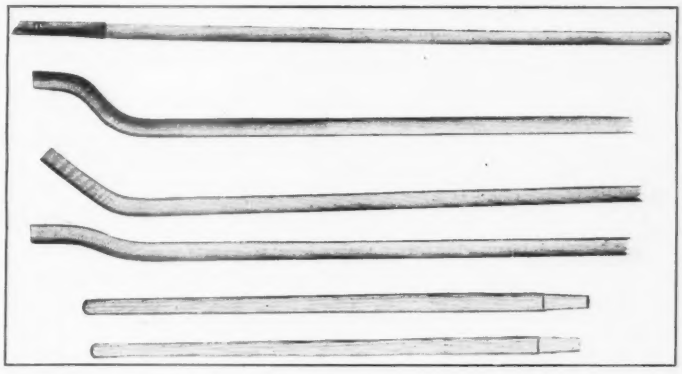
4. Tools for pounding. These are not very clearly defined, but hammers, mallets and mauls belong here.

5. Tools for painting, sweeping and dusting, such as brooms, brushes and mops.

6. Handles for vessels which need them, like pans, pails, ladles, dippers, skimmers and coffeepots.

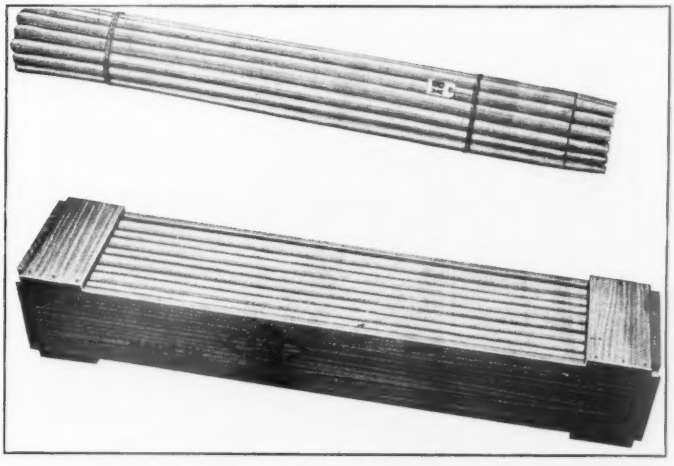
It would not be difficult to designate several kinds of handles which do not seem to belong in any of these classes; but nothing more precise than a general grouping has been attempted.

Strength is one of the chief considerations in selecting handles for farm tools, and also for those intended for cutting, punching and pounding, and frequently both strength and toughness are of prime importance, though more than half of the handles made do not require tough or strong woods. They are not expected to endure severe strains or twists. Among handles of that class are those for paint brushes, pails, packages, saws and numerous other tools and commodities.



STYLES OF LONG SHOVEL HANDLES

There are as many styles of long as of short shovel handles. Each tool for a particular use has a handle style of its own. Differences in styles consist in length, diameter, and especially in the bend or crook. Ash is the prevailing wood, but hickory and occasionally other species are used.

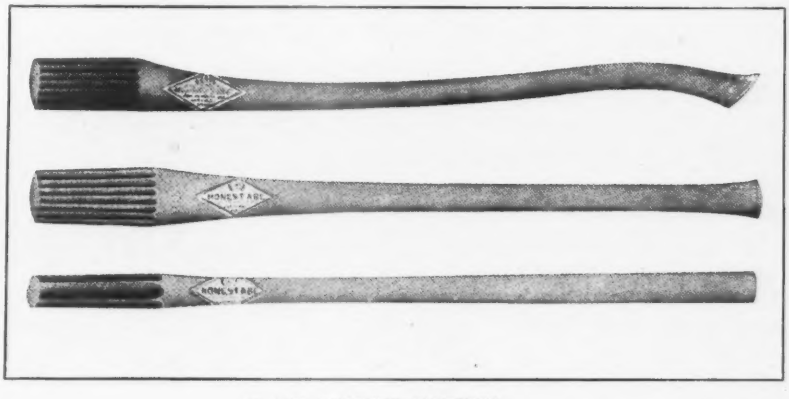


PACKED READY FOR EXPORT

American handles, and particularly hickory handles, are exported in large numbers to foreign countries. They stand without a rival in those markets. The exporter crates them or ties them in bundles of two dozen. The illustration is shown by courtesy of the United States Handle Export Company of Piqua, Ohio.

There is a difference between farm tools and agricultural implements. The tools are for hand use; implements are operated by horses or other power a little stronger than man's muscle. The distinction may not be recognized always and everywhere; but most people acquainted with the matter bear it in mind. Taking that view of it, a scythe is a tool, a mowing machine an implement; a flail is a tool, a thrasher an implement; a pitchfork is a tool, a tedder an implement. Most farm tools have wooden handles, but implements usually have none.

Up to a time less than a century ago, agricultural implements were rare. Few had been invented, except the plow which was a poor affair until recent years. The farms were then cultivated with tools, yet the factories for making tools were small and few. The metal parts were hammered into shape in blacksmith shops, and the



AX AND HAMMER HANDLES

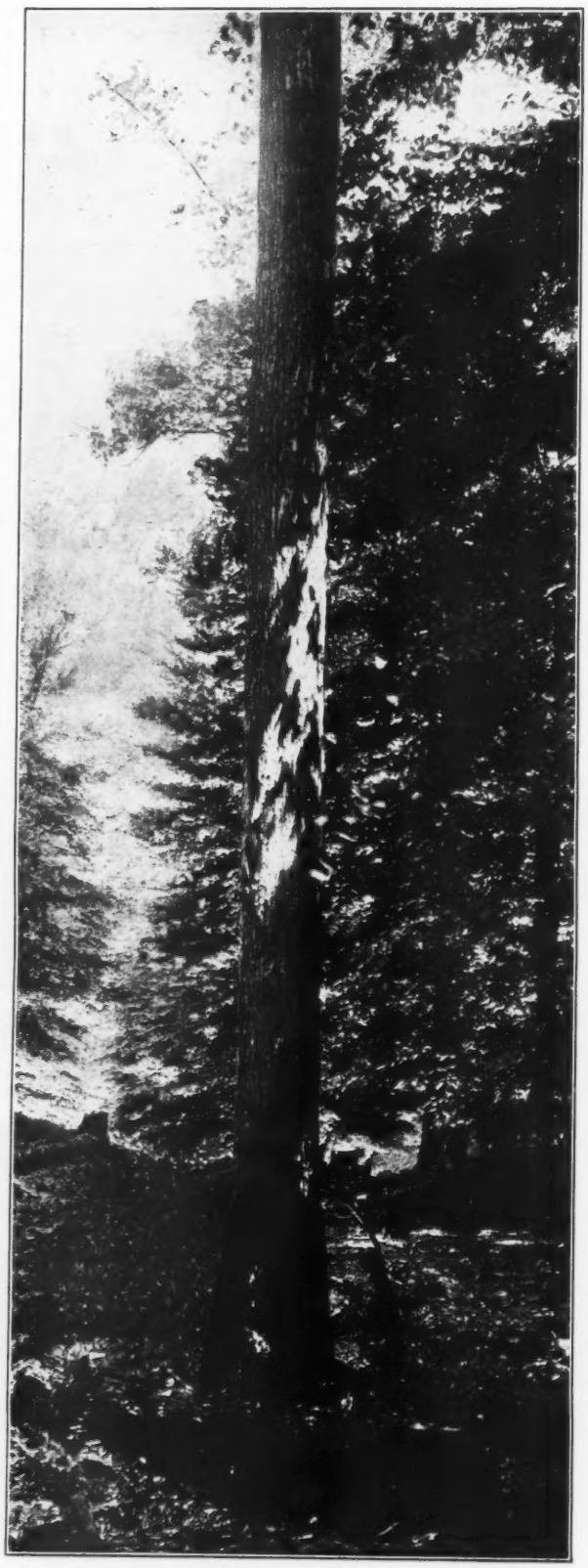
Three common styles are here shown, but each style has a number of variations to meet individual tastes. The upper is an ax handle, the middle one is for a pick, and the lower for a sledge hammer. Such are usually of hickory, the hammer and ax handles being of sapwood, and the pick of red heart.

handles were hewed and shaved by hand. The scythe cut the hay, the sickle the grain. The grain cradle is quite recent, but the scythe and the sickle were ancient, and the flail which thrashed such of the grain as the horses and oxen did not tread out, was the main dependence in separating grain from straw. Rakes were of wood, both handles and teeth, and most pitchforks were of wood, both handles and tines. Thousands of years were necessary to bring them to the degree of perfection in which the beginning of the nineteenth century found them. Compared with the corresponding tools of today, they were crude and clumsy. But their use served one good purpose at least: the man who made and used the tools learned by experience what woods were best, and these woods still furnish the handles and part of the other materials of which tools are made.

Ash is the leading wood for the farm tool handles, and more than one-fifth of all the ash cut in the United States goes into such handles. It is strong and does not snap easily and has plenty of spring. Fork handles are of various lengths to suit different kinds of forks. Two general styles of shovel handles are in use, the long and the "D." The latter name is due to the shape of the grip for the hand at the end of the handle. Hoes and rakes also have handle styles ranging through many lengths and diameters.

The invention of agricultural implements did not drive tools out of existence. Perhaps as many are made now as ever before. Even the sickle is still sold in country stores for use in some rural communities, and cutting lawns in towns. Grain cradles and flails may be bought, and most farms possess a scythe or two to be employed in mowing weeds from fence corners, trimming round trees and stumps, and occasionally for mowing grass. The scythe handle is called a snath, which is a name handed down from the Anglo-Saxon hay farmers. The snath is the most crooked handle in existence, if it is well formed. Formerly the farmer who wanted a handle for his scythe went into the forest and searched until he found a sapling with natural crooks conforming to his idea of what they should be, and no artificial bending was attempted. Now the snath maker steams his ash, hickory, cherry or mulberry, and bends it according to a regulation pattern. In some of the parishes of Louisiana descendants of the French settlers still use homemade snaths and wooden pitchforks. The same styles are sometimes seen in the mountainous regions of eastern states.

The proper seasoning of wood is highly important in the manufacture of farm tool handles. The long and slender spindles of wood, if not thoroughly dry, will bend out of shape when strain is put on them, and they never regain their form. When farmers made their own forks and rakes, it was customary to air season the handle woods for years, or at least for a year, before whittling the handles into final shape. Manufacturers



SMOOTHBARK HICKORY FOR HANDLES

This picture shows a large, straight trunk from which the finest handles are made. As a usual thing the largest hickory trees are not the best for handles, because the sapwood becomes thinner with age and size, and the sapwood is the best part, or is so held in popular opinion.

now hasten the process by using the dry kiln.

Edged and pointed tools are of so many kinds that it is impractical and would be unnecessary to list them. Axes and sledge hammers, and others like them, must have highly elastic handles in order that the workmen's hands be spared from the jolts, jars, and stings resulting from striking blows. Some other tools do not call for resilient handles, chisels, awls, augers, and hatchets being in that class. For elastic handles, hickory is without a peer. It possesses more good qualities, and fewer that are poor, than any other handle wood in this country, or in any other, so far as known. The expert axman can almost instantly pass judgment on a handle when he gets his hands on it. When hickory cannot be had, handles for axes are made of other woods. Some of the woods answer fairly well, but others are poor. Every wooded region has one or more ax handle woods, though some of them do not rate high. Hornbeam and blue beech are used in certain of the northern states. On the Carolina coast good ax handles are made of tough young oak, and to improve the quality of the wood it is boiled in oil, after which it may be bent far out of line and it will spring back. Many ax handles are of ash, some of birch, others of maples, and in California eucalyptus is satisfactory, provided the handles can be prevented from warping out of all reason. Locust and bois d'arc make strong handles, but these woods are so rigid and harsh that the chopper's hands may be severely bruised in the process of striking blows. In the absence of better woods, ax handles have been made of wild cherry.

MATERIAL FOR FARM TOOL HANDLES

This white ash trunk is prime stock for the handle factory. Nothing better can be had for pitch fork, shovel, spade, hoe and rake handles. This tree grew on the bank of the Muskingum River in Ohio, and was more than three feet in diameter, with an assurance of clear, straight wood.

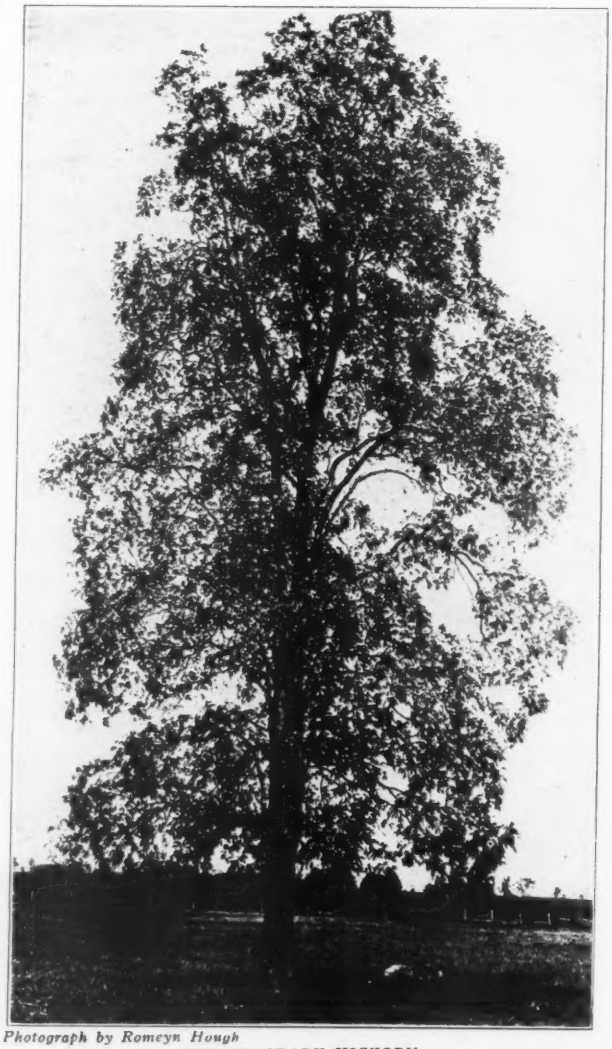
When a farmer or a country wood chopper makes himself a hickory handle for his ax, he splits the billet from the white sapwood and shaves it into shape without any cross grain. The final polishing is usually done with a piece of glass. The whiteness of such a handle when new is like ivory, and if the handle does not give the countryman two or three years of service, it does not come up to expectations, though it would scarcely last a lumberman that long where it has constant use. Hickory rots quickly when exposed in damp places, and decay need not advance far or last long before it renders the wood brash. It then breaks easily.

Fashion governs in the selection of wood for handsaw handles, but not for those fitted for other saws. The operator of a crosscut saw is satisfied if the handle is strong and is of wood which polishes or wears smooth. A rough, harsh handle is apt to blister the sawyer's hands. Among the satisfactory woods for crosscut saw handles are maple, birch, beech, hickory, dogwood, persimmon, hornbeam, sourwood and gum. On the northern Pacific coast where good hardwoods are few, a satisfactory crosscut saw handle is made of cascara buckthorn which wears very smooth.

According to some unwritten law, a handsaw handle is supposed to be made of applewood, though some are of wild cherry, beech, mahogany and birch. The yearly demand for applewood to equip handsaws with handles exceeds 150,000 feet. It comes from old orchards where trees are cut to make way for improvements. It does not pay to grow apple trees for the wood alone. Early colonists in Pennsylvania, who were acquainted

with the value of apple and pear wood in Europe, for engraving and carving, planted and pruned their orchards with the ultimate object of selling the wood after the trees were done bearing. For the purpose of producing smooth trunks, they pruned their apple trees about fifteen feet high, leaving no limbs near the ground. Wood grew wood at the expense of fruit. They found no sale for applewood in their time, but more than a century afterwards some of the old high-pruned orchards were bought by saw manufacturers who made handles of the richly-colored wood.

Many kinds of wood, excellent, medium and somewhat poor, are manufactured into handles for brooms, mops and brushes of numerous sorts. Requirements are so various that most woods are suitable for some of the handles in this class. Extraordinary strength is not essential, nor is high elasticity required. Broom handle makers sometimes insist upon having heavy woods like sugar maple and birch, but they prefer that kind because weight helps the sale of the brooms, and not because a heavy handle makes a better broom than the one with a light handle. Brooms, handles and all, may be sold by the ton, and the heavier the wood, the more favorable the selling price. Broom handles are now produced by machinery and in large quantities, but the old hand-made broom which was put together by farmers for their own use many years ago, often had octagonal handles, shaved slowly, one at a time, with a drawing knife. An expert could shave fifty a day.



*Photograph by Romeyn Hough*

THE SHAGBARK HICKORY

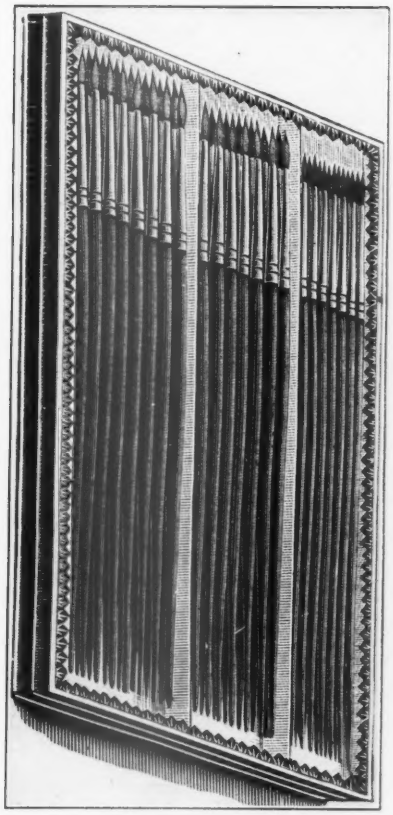
Note the characteristic tall, oblong crown, even in field growth. It generally furnishes the highest quality of hickory wood for commercial purposes and by some this is called the national tree of America.

Paint brush handles are generally in the cheapest class. In size they vary from those as long as a broom handle down to lengths of four inches or less; and many kinds of wood are satisfactory for their manufacture. Enormous quantities of such handles are made by special machines run at high speed.

The cheapest grade of handles are those for pails, buckets, bundles and boxes, but many of them are made of handsome and expensive woods and it is not unusual for them to be painted, stained, enameled, or japanned. That finish is put on to hide the cheapness of the wood and to improve the handle's appearance. The pattern is cylindrical, bored lengthwise for the insertion of a wire bail or fastening to complete the handle. The wooden piece is merely the grip for holding in the hand. It is three or four inches long and an inch or less in diameter. The softwoods represented in the handle business are mostly in products of this class, and hemlock leads the softwoods in quantity.

Another group of small handles differs in some particulars from the foregoing. They are for use on buttonhooks, manicure rasps, ladles, dippers, and many similar tools and utensils. Wood is one of the best nonconductors of heat, and when a wooden handle is affixed to a coffee pot, frying pan, curling iron, or any other tool that is to be used near the fire, it is meant to keep the hand from the hot metal. The wooden handle on a poker or a fire shovel is there for a similar purpose. The wooden handle is frequently employed to protect the hand against cold instead of heat. In very cold weather metal tools quickly freeze the hand that comes in contact with them, and the protection which a wooden handle affords is highly essential. The holds with which levers in mills and brakes on cars and wagons are equipped are examples of the use of wood as a shield to the hand, against both cold weather and the hardness of the metal.

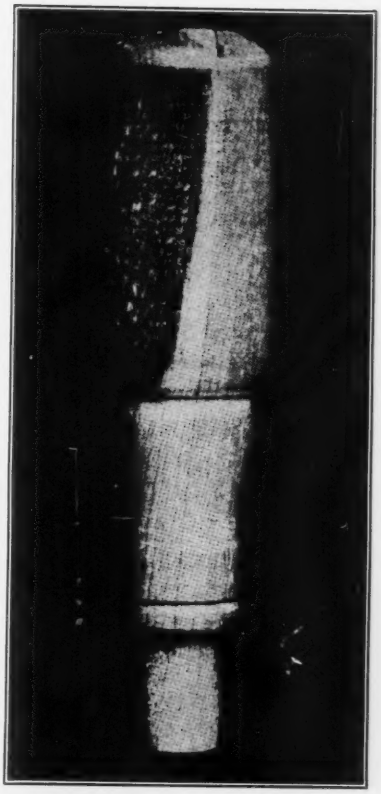
The wooden knife handle occupies a large place or several places. This handle may be of very cheap and common wood, or it may be made of the finest and most costly product of forests either domestic or foreign. Foreign woods listed in the knife handle industry may cost thirty or forty cents a square foot. Highly expensive woods are used in very small pieces on each knife. The wooden part of the pocket knife handle is usually thin and is restricted to a thin splint on each side. Such splints are known as scales. A foot, board measure, of



HANDLES OF SMALLER SIZE

The wooden handle as equipped with the diminutive brush of camel hair for water color painting is among the smallest regularly manufactured. The penholder is very near akin to these handles in size and form. The illustration shows a package put up ready for shipment or for sale

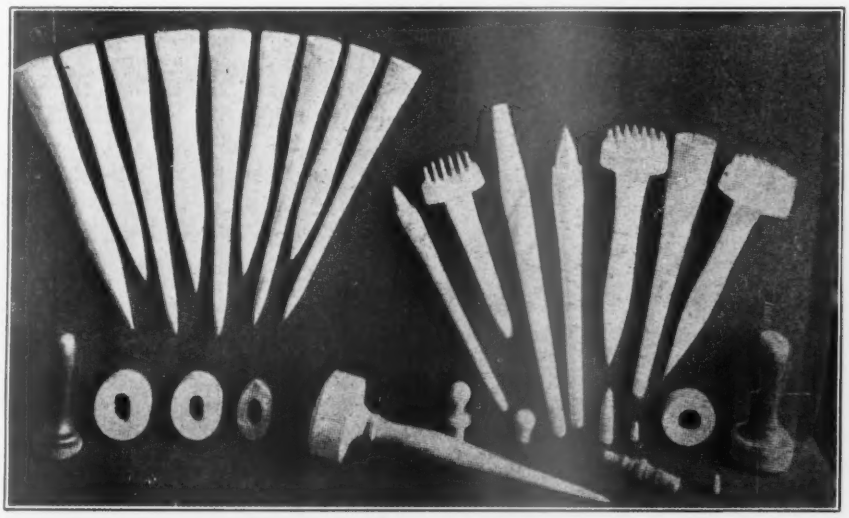
cocobola, boxwood, or green ebony, will supply enough handle scales for a hundred pocket knives; and though the wood may be very costly, the pieces are so small that the wood for a single knife handle may cost less than a cent. The foreign woods listed in the knife handle trade are hard and handsome. It is commonly supposed that American forests do not grow woods suitable for such handles, but that opinion is probably erroneous and persists because of ignorance of the real wealth of woods in our forests. Many of the minor species are little known and some of them produce woods of fine grain, handsome color, excellent hardness, and good working qualities. Nearly six hundred kinds of woods grow wild in the United States, and not more than half of them are in common use. It is true that most of the minor and little used species are quite scarce, but enough wood might be secured from them to supply handles for all the pocket knives made in this country. Many knife handles are of plain uncolored woods, and there are gradations from the finest to the commonest. Even the cheapest woods may be peculiarly suitable for certain kinds of handles. Oystermen use an aspen wood handle for the shucking knife.



SHORT HANDLES OF HARDWOOD

This is a type of handle made by the million for small tools like screw drivers, awls, files and other similar kinds. Different woods are in use, but the harder it is, the better. The handle shown in the cut is of paper birch, part white sap and part red heart.

It possesses a peculiar characteristic which prevents the handle from becoming slippery when in contact with oysters, and workman can retain firm hold on and good control of the handle. That is not the case with most woods in that situation.



PAINT BRUSH HANDLES

Hundreds of patterns, shapes, and sizes of paint brush handles are on the market and no complete list is possible or desirable. The accompanying cut shows a few of the most usual. The man who makes the handles is seldom the man who completes the brushes by attaching the bristles or fiber. Most handles of this kind are made to order.

A larger assortment of special woods are listed in the handle industry than in most others. Among such are hickory for ax handles ash for pitchforks, apple for handsaws, aspen for oyster knives, cocobola for pocket knives, hemlock and paper birch for buckets and pails, and sugar maple for broom handles.

No general shortage of handle woods need be feared. Though 280,000,000 feet a year must be cut to meet the demand, enough is in sight or in prospect to supply the needs of the handle manufacturers. So many species may be used that

HEMLOCK FOR PAIL HANDLES

More handles are made of hemlock than of any other softwood of this country; but they are handles of certain kinds only, such as are seen on bucket bails to provide a hold for the hand, and on packages, bundles, and schoolbook carriers, and on lunch boxes. They are cheap and are seldom enameled.

the drain does not fall heavily upon any. Exception to this view might be taken with regard to three woods, hickory, ash, and apple, each of which is demanded for a special class of handles, apple for saws, ash for farm tools, and hickory for axes and some kinds of hammers, and also for golf clubs. An examination of the sources of supplies brings to view no alarming condition. Hickory to the amount of 120,000,000 feet is cut yearly for handles, and nearly 20,000,000,000 feet of standing hickory remain in the United States. It is clear that exhaustion of this wood is not imminent, though it is used by many industries besides that producing handles. Hickory grows rapidly and it flourishes best as an open ground tree, and seedlings may be expected to spring up in old fields and in cut-over lands. These situations are precisely the places where the hickory tree produces its best and most abundant wood. The more rapid the growth of hickory, the better the wood is. It is one of the few trees whose sapwood is more valuable than the heart; and since sapwood predominates in young trees, hickory is valuable as soon as it reaches a size sufficient to make billets. Therefore, hickory is good for handles when quite young, and it being a species which reproduces rapidly and abundantly, handle makers in the future can rest assured that hickory trees can be found.

The situation is not quite so reassuring with regard to ash for tool handles; yet no cause for pessimism exists. Handlemakers require about 64,000,000 feet of this yearly, and the existing supply of standing ash timber in the United States has been estimated at 16,500,000,000, which, if cut for handles alone, would last 250 years without depending on new growth. But other industries demand ash, and young trees are coming on. The drain is pretty severe, but no cause for uneasiness or alarm is apparent. Ash handles for hoes, forks and shovels will be forthcoming during many future years.

Good handsaws could be made without applewood handles; but enough of this wood for handles is assured for a long period.

A large class of small, medium, and miscellaneous handles can be made from American woods without danger of exhausting the supply. No large quantity of foreign woods is imported by handle makers, but such as are imported are very hard and very fine-grained woods, or woods of attractive color. These, too, might be largely, if not wholly, supplied from our own forests, not to identical species which are brought from foreign countries, but others which might take their places without causing any lessening in quality or appearance of the handles produced. Our forests are rich in minor species of hardness, fine color, strength and of beautiful grain. Most of them are not abundant, but they exist in sufficient quantities to meet a much larger demand than is now met by imported handle woods. The trouble is, manufacturers are unacquainted with or have no knowledge of many woods of our country

which do not appear in the markets, and they have made no effort to become acquainted. Beautiful, hard, strong woods are to be found in many regions, though thus far they have not been much used for any purpose, out-

AN APPLE TREE TOO OLD FOR FRUIT

Old trees like this furnish stock for handsaw handles. The tree in this picture is of historical interest, it being the original and first "Grimes Golden." All apples of this well known variety have descended from this tree which was discovered wild on the bank of the Ohio River a century ago. Photograph by courtesy of the Baltimore & Ohio Railroad.

side of the immediate localities where each grows. The list which follows names some of them, but by no means all which ought to make fine, small handles. The list likewise gives the wood's color, and the region where the species is best developed:

| Name of Wood. | Color. | Region of Growth. |
|---|---|---|
| Yew | Red | Washington |
| Black olive | Yellowish brown | Florida |
| Mesquite | Reddish brown | Texas |
| Lancewood | Dark brown | Florida |
| Santa Cruz ironwood | Clear red | California |
| Mountain mahogany | Reddish | Utah |
| Mangrove | Reddish brown | Florida |
| Texan ebony | Dark brown | Texas |
| Valley mahogany | Reddish | California |
| Crabapple | Brown or reddish | Ohio Valley |
| Service | Reddish | Pennsylvania |
| Nakedwood | Yellowish | Florida |
| Huajillo | Dark | Texas |
| Cockspur thorn | Brown | West Virginia |
| Huisache | Rich reddish brown | Texas |
| Wild plum | Dark brown | Ohio |
| Black calabash | Brown | Florida |
| Red ironwood | Rich reddish brown | Florida |
| Waahoo | Orange-white | North Carolina |
| Blackwood | Black | Florida |
| Catsclaw | Rich brown | Texas |
| Fiddlewood | Red | Florida |
| Redbud | Brown | Arkansas |
| Strongback | Brownish yellow | Florida |
| Devilwood | Dark brown | Florida |
| Frijolito | Reddish orange | Texas |
| Madrona | Reddish | Oregon |
| Joewood | Rich brown | Florida |
| Mountain laurel | Reddish brown | Kentucky |
| Jamaica dogwood | Clear yellow brown | Florida |
| Manzanita | Reddish brown | California |
| White buttonwood | Dark yellow | Florida |
| Lignum-vitae | Dark green | Florida |
| Holly | White | Alabama |
| Poisonwood | Orange brown | Florida |
| Koeberlinia | Brownish yellow | Texas |
| Satinwood | Light orange | Florida |
| Huckleberry | Dark yellow | Arkansas |

**Note:** In Mr. Maxwell's article in the September issue on "Wood in the Manufacture of Boxes and Crates" the legends of two of the illustrations on page 536, "Box Board Matching Machine" and Screw Driving Machine" should be transposed.

The woods in the foregoing list are more widely dispersed than is indicated by the name of the single state where each is best developed. Some of the species are found in a dozen or more states. However, Texas and Florida are credited with more than any other states. Climatic conditions in those regions are doubtless re-

THE FUTURE'S WALNUT HANDLE SUPPLY

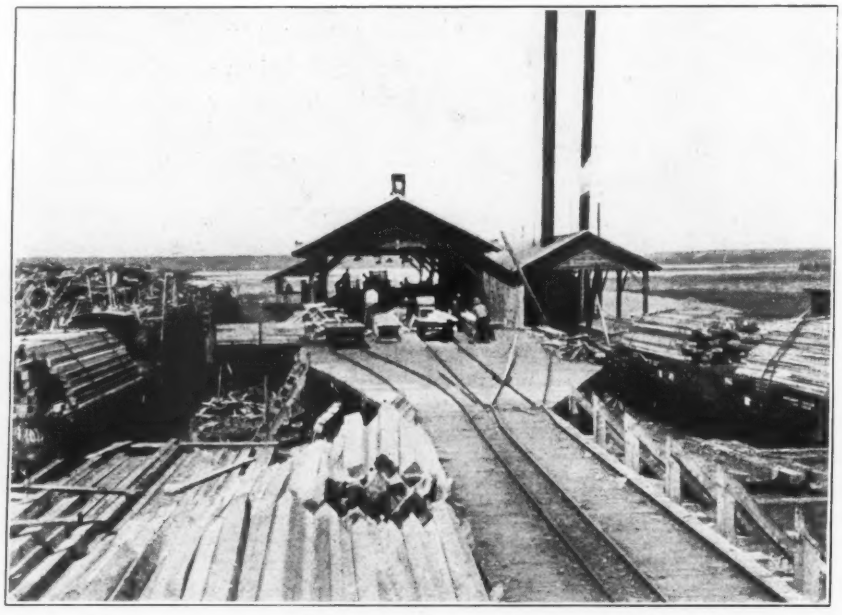
Fine handles for knives and small tools are frequently of black walnut. The war demand has depleted the supply of large trees, and dependence for walnut handles in the future must be placed on small growth. The above cut shows a thicket of young walnut saplings which will do for handles in about twenty years.

sponsible for the profusion of hard, heavy, colored woods found and which invite investigation from certain classes of handle makers. Some of the woods are very scarce, and others are rather plentiful.

# ANOTHER FOREST REGIMENT FOR FRANCE

DO you see that sawmill? Now rub your eyes. The magic carpet has lifted it and is carrying it twenty-five miles away. This is not a fairly tale. It is a story of the American foresters in France. A 10,000 capacity mill was buzzing away merrily one day in the woods of France. Forty-seven hours later it was operating at a point twenty-five miles away.

More men who can do things like this are needed on the other side. They are needed to bring victory quicker. That is the reason why there is being organized what practically amounts to another American Forest Regiment for service in France. With the growing demands of the army for lumber of all sorts it was found necessary to add to the force of workers who are getting out the railroad ties, the trench timber, the wood for new buildings and for a hundred other purposes. Whether the new regiment will be formed into a separate organization or incorporated with the 10th and 20th Engineers (Forest) is not yet certain.



AMERICAN SAWMILL IN FRANCE

It is in plants like this that millions of feet of lumber are being turned out for all sorts of army uses The mills are being driven day and night with ten-hour shifts at work.

It is expected to have all the new men on the other side in a short time, within the next month or two at the outside. The officials on this side who are selecting the members of the new regiment are working with some of the same speed which the rustlers on the other side are showing. The officers are being selected from experienced logging superintendents, mill operators and superintendents and others in civil life who have been accustomed to handling entire operations in lumbering; the enlisted men will be chosen from among drafted men whose trade in civil life has been that of lumber jack, saw mill man or forester. In a camp in this country they will be given a month or so of intensive instruction in military drill and in the duties and responsibilites of soldiers.

The principal qualifications for the officers who are to be in charge of the new regiment is that they be able to take charge of logging and lumber manufacturing operations immediately on their arrival in France. Organizers and administrators with experience in all branches of lumbering and manufacturers who know all the processes from the stump to the car, are the class from which will be selected largely the commissioned officers. Men are needed who can rustle equipment and supplies and do it under abnormal conditions, where time is worth more than money and men easier to obtain than machinery and where breakdowns must be patched up with whatever is at hand. For convenience in handling all such applicants, as well as those selected from civil life for commissions in other branches of the army service, there have been established by the personnel branch of the General Staff agencies in a number of cities through which applications must be handled. These agencies are at the district headquarters of the recruiting sub-section and the offices of the Military Training Camps Association in the following places; New York City, Boston, Philadelphia, Atlanta, Chicago, Cleveland, St. Paul, Dallas, Kansas City, Portland, Oregon, San Francisco and Los Angeles. This new procedure has the great advantage that it saves those desiring commissions the inconvenience of coming or writing to Washington. With more than 2,000,000 American soldiers in France and with several hundred thousand being added to their numbers each month, it is necessary for the foresters to keep pace with the rest of the army. In fact, they must keep ahead and anticipate the demands of the fighters. They must prepare months in advance the timber of all kinds which will be called for. While they work in the rear they really lead the army. When the long lines of khaki-clad boys arrive they must find barracks ready to receive them, hospitals erected, Y. M. C. A. huts, and in addition many millions of feet of lumber to be employed in construction work essential to their advance. Many of the loyal foresters who are felling trees would prefer to be felling Germans, many of those who are guiding the logs

through saw mills and shaping them would rather be up in the front line somewhere; but they are faithfully shouldering that portion of the service which falls to their lot, working with a will and ofttimes putting in long hours. It is seldom that any of them work less than ten hours a day.

There is no doubt but that the new regiment which will soon be on its way overseas, will live up to the reputation already established by the American Forest Regiments in France. They have shown some marvelous accomplishments in production which opened the eyes of our allied brothers in arms, and they have also introduced some methods in logging and in manufacture, as well as in lumber conservation, which were new to the French but which won their praise and their admiration. At the same time much of value in forestry work has been learned from the experts of Europe who had been studying and improving forestry methods for many years.

The adaptability of the American Forest Regiments to new conditions was one of the surprising things to the French. This gives ample assurance that the new men to be sent over will "find themselves" immediately upon their landing on the other side. That they will find a way or make a way for getting out all the timber that is necessary, is a foregone conclusion.

MAJ. DAVID T. MASON

Maj. Mason spent one year in France in connection with the American army's forestry work there, and is now in this country assisting in the organization of the new force of foresters which is to go abroad.

The French were surprised for one thing at the large output from the American sawmills. Plants which were rated at a certain capacity doubled or trebled the amount it was supposed they could handle. Instead of 10,000 feet in a day they turned out 25,000 or 30,000 feet. They accomplished this in various ways. One was by the operation of two ten-hour shifts. The way in which these mills were driven night and day was one of the large production methods. The use of thick circular saws has permitted this driving quick results. The French are accustomed to thin saws. This was slower although it is not so wasteful of timber. As a matter of conservation, therefore, the thin saws had been used. They did not produce much sawdust. But the Americans showed that there need be little loss on this account, that the sawdust could be utilized for fuel under the boilers which ran the larger mills. The greater results obtained by the use of thick saws, it was found, did not conflict with proper conservation.

Another important conservation measure which the Americans put into operation was in connection with the getting of the logs from the forests to the mills. The French had not been accustomed to driving logs loose in the streams. It was claimed that their specific gravity was too great and that they were too heavy to handle in this manner; and so other means of transportation were adopted. These required more man and team power. The American forest workers, however, began to fell trees three months in advance of the time they were to be moved. The branches and leaves were left on the trees and as long as they remained continued to draw moisture from the trunk. By the time, therefore, that the logs were ready for the mill they had lost much of their specific gravity and were floated down stream without any difficulty. This along with many other short cuts and labor-saving devices which had been seen in operation or learned in theory in the United States proved of inestimable value in speeding up the output of lumber and in keeping Pershing's men supplied with all they needed.

The way in which these forest engineers of the American forces built railways to move their products with greater facility and in much larger quantities than by simpler methods and the gain in efficiency obtained thereby, was another feature of American methods which appealed strongly to the French and won their high commendation. It was found that in spite of the preliminary work required in building logging railroads, the ultimate saving in time and labor and the greater results obtained more than compensated for the original outlay. The American mills in France have been running full speed. They have not

slowed up for a minute. They have been turning out the material as fast as it was humanly possible. The men behind them have been working night and day to keep up with the tremendous demands upon them. They have worked early and late. Their one thought has been—more lumber. They have put brain as well as brawn into their task. They have allowed nothing to stand in their way and have overcome obstacles which appeared almost insurmountable. In spite of this the growth of the army has been such, new troops have been pouring across the ocean at such a rapid rate that it has become necessary to increase the size of the forest force. This is being done by adding the equivalent of a new regiment to the two regiments already on the scene. The army which the United States plans to have in France by next spring, which will then number 3,000,000 or more, will not want for the timber it needs to push forward through the German lines.

OFF TO THE SAW MILL

The American Forest Regiments in France have speeded up the transportation of logs by building railroads wherever possible for this purpose, instead of using the slower team method of the French.

The new regiment will do its part in helping to meet this demand. Winter snows and cold weather will not stop the men from the good work for which they are crossing the Atlantic. They will get out the trees and cut them into all shapes and sizes, into piles for trench fortification and railroad bridges and foundations, into ties for railways, into boards for buildings and boxes, and so on through a long list. The part wood is playing in the war cannot be over-emphasized. The men of the Forest Regiments are truly soldiers of the first rank. Axes and saws are the bayonets with which they are fighting the Boche.

CLEAN FORESTRY

This is the condition of the timber lands in parts of France where the American forces have been busy in getting out lumber. The lower picture shows a maritime pine forest cupped for turpentine, with piles of fern cut for compost to be used on sandy agricultural land. The other picture is of a cork orchard.

**HOW WOOD COMPARES WITH COAL IN HEATING VALUE**

**In heating value one standard cord of well-seasoned hickory, oak, beech, birch, hard maple, ash, elm, locust, or cherry wood is approximately equal to 1 ton (2,000 pounds) of anthracite coal, according to estimates by the Forest Service, United States Department of Agriculture. However, a cord and a half of soft maple and 2 cords of cedar, poplar, or basswood are required to give the same amount of heat.**

**One cord of mixed wood, well-seasoned in heating value at least 1 ton of average grade bituminous coal.**

# OUR LUMBER OPERATIONS IN FRANCE

BY CAPT. GEORGE E. LAMMERS,

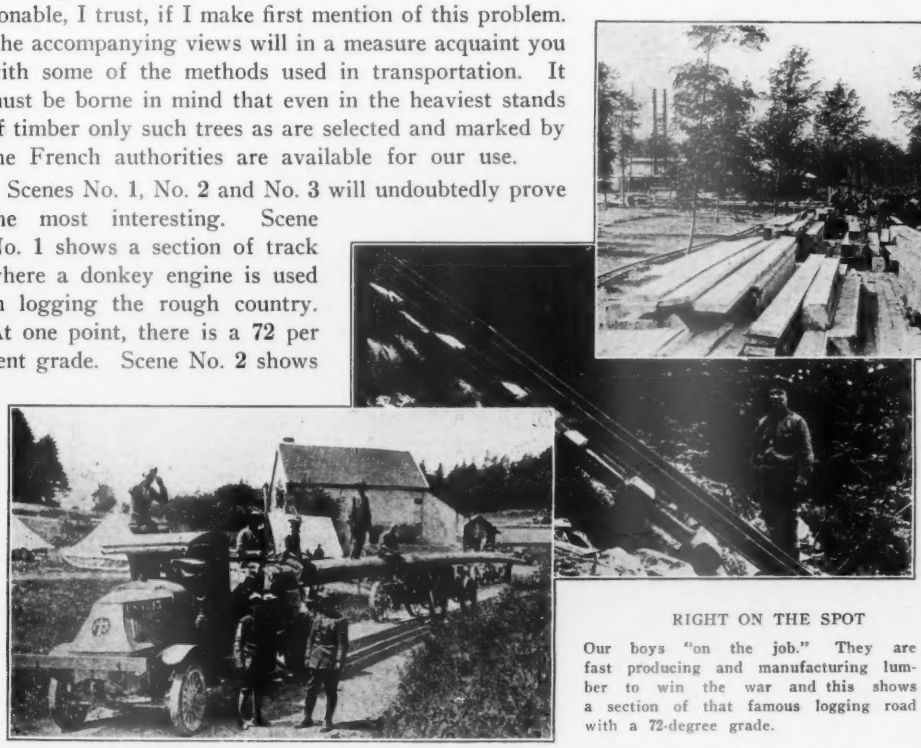
20TH ENGINEERS (FOREST), A. E. F.

UNLIKE those we left behind, the lumbermen in France are not worrying about market conditions, as we enjoy the unique distinction of operating on a mammoth scale without the aid of price lists and discount sheets. We are not losing sleep over excess profit taxes, nor are we fretting about collections or financing in general. The wage problem causes us no concern whatever, and we do not have to contend with the scarcity of labor. This introduction is not written with the idea of recruiting your services for overseas duty; not that we would not welcome each and every one of you, but it would be unfair to dwell only on the things which do not worry us, for all is not "easy sledding."

Being concerned chiefly with transportation, it is pardonable, I trust, if I make first mention of this problem. The accompanying views will in a measure acquaint you with some of the methods used in transportation. It must be borne in mind that even in the heaviest stands of timber only such trees as are selected and marked by the French authorities are available for our use.

Scenes No. 1, No. 2 and No. 3 will undoubtedly prove the most interesting. Scene No. 1 shows a section of track where a donkey engine is used in logging the rough country. At one point, there is a 72 per cent grade. Scene No. 2 shows the transportation of piling from the woods to the railroad. At some operaions, we are getting out 90', 95' and 100' piles for dock construction and, in as much as the founders of the French villages overlooked the necessity of accommodating such traffic in laying out their streets, we have encountered numerous difficulties. Scene No. 3 shows a few dock timbers on one of our loading platforms, but it is especially interesting from the standpoint of transportation. Note the French couplage cars with the swivel bunks. The average French car will not accommodate stock over 16' long and only has a capacity of 10 tons. When long stock is loaded, couplage sets are furnished. A couplage set consists of two or more flat cars equipped with swivel bunks and idlers between the cars varying in length according to the length of the stock to be loaded.

France, it is true, is literally covered with a network of railroads both narrow and standard gauge, but this does not simplify transportation problems. A number of our operations are located on narrow gauge lines which necessitates transfer and storage yards at standard gauge junction points. We have five different railway systems to deal with in addition to our own lines of communication operated with American equipment. In spite of the fact that the Americans have rebuilt a considerable number of French locomotives and cars in addition to erecting our own, daily transportation problems will enable us to talk intelligently on the "car shortage" subject when we return.



RIGHT ON THE SPOT

Our boys "on the job." They are fast producing and manufacturing lumber to win the war and this shows a section of that famous logging road with a 72-degree grade.

You will undoubtedly be as pleased to learn as we are to announce that our production has increased monthly by leaps and bounds and that our daily average for July was 1,300,000 feet. The demand, however, still exceeds the production by far, due to the amount of permanent dock, railway and warehouse construction, but additional troops and equipment are constantly arriving to assist us in meeting the demand. Judgment, however, should not be passed on the efficiency of our organization, based on the daily cut for July, for in addition to this, we are keeping pace with the demand for piling, poles, entanglement stakes, pit props, camouflage pickets and fuelwood, all of which are as essential as the output of our mills.

Very interesting articles could be, and we hope some day, will be written on the timber we have acquired in France; the logging chances which confronted us and methods used; the possibilities of French, Scotch and American sawmills; the problems of supplying mills rated from 1½M to 20M capacity with suitable orders, and many other subjects on which you would all like to be enlightened. However, the most interesting reading of all would be an article on the difficulties of convincing an able-bodied, blue-blooded American lumberjack that his place is not in the front line trenches.

## PLANT BLACK WALNUT

BECAUSE of the very high lasting qualities of its wood and the moderately rapid rate of growth of the tree in good locations, black walnut is one of the few most desirable trees to plant on the farm, says the *Weekly News Letter* of the Department of Agriculture. Small patches of rough, gullied, or unused land about the farm and narrow strips along fence rows and highways or corners of barnyards and stock lots make ideal places for planting this valuable tree. The method is simple, and the present heavy crop of nuts makes this year a most favorable time to begin work along this line. The region where walnut growing is practicable extends from southern New England west to the Central States and south to South Carolina and along the northern portions of the Gulf States to Oklahoma. The finest growth takes place in the rich coves of the lower Appalachians and over the Ohio and central Mississippi basins.

The black walnut tree is comparatively free from insect attack, particularly the wood. The price of black walnut lumber in recent years has been consistently high. Another factor to be considered is the rapidly diminishing supply of walnut trees over practically its entire range in the United States, due to recent cutting in order to meet the demand for gun-stock material. The tree yields durable wood which may be used for posts and for a wide variety of purposes about the farm, in case it is not sold in the lumber market.

In order to succeed well, walnut requires a rather good grade of soil, hence no attempt should be made to plant it on poor, thin soil or on hot, dry exposures. Favorable situations for rapid development are on strong limestone soils, deep alluvial soils, and stony loam soils along the margins of highlands. Since the walnut tree requires a large amount of light, it may successfully be planted on open tracts recently cleared of old growth and on recently abandoned fields. In this respect it resembles black locust, which, however, grows faster, but in many localities is more or less subject to serious attack by a wood-boring beetle.

The walnut crop was particularly heavy this year, affording a splendid opportunity to gather or buy seed for planting. Nuts should be stored over winter and planted the following spring. They are best stored in pits dug in the ground, the bottom of the pit being covered with leaf litter or straw, on which a 3-inch layer of nuts is placed, then a layer of litter, and so on, covering the whole with soil so as to leave the surface a few inches higher than the general level. Planting should be done about the time germination begins. In eastern United States north of the Gulf States, this is during the months of March and early April. Squirrels, chipmunks, and hogs are serious pests if present in numbers and would more than likely succeed in making away with a majority of the nuts if they are planted in the fall. Small tracts, however, surrounded by cultivated fields and other places where these animals are known to be scarce might safely be planted in the early or late winter when labor is more accessible than in the spring.

To plant the nuts, make a small hole with a mattock or hoe, drop one or two nuts in each hole and cover them with about 2 inches of fresh, firmly packed soil. For the larger areas, a good spacing in forest plantations is to dig the holes 8 feet apart each way or 8 by 10 feet, which amounts to 680 and 545 holes per acre for the two spacings. For small areas, or along fence rows and highways, the spacing should be about 8 feet in the row, unless permanent shade is desired, in which case the distance should be 20 feet during the early period of growth and subsequently increased to 40 feet by removing the alternate trees. For purposes of nut production the trees should be spaced at distances of from 40 to 60 feet apart, and should be given a due amount of cultivation. Requests for information along this line should be addressed to the Bureau of Plant Industry of the Department of Agriculture at Washington. The number of nuts required can easily be found by knowing approximately their quality, the area of ground to be treated, and the spacing. Care should be taken not to plant under shade. Where the trees in the old wood lot are to be cut during the next year or two and are moderately open, planting might begin now, so as to get a start in advance of the removal later of the overhead protection against early frosts and excessive drying of the soil in midsummer.

While the best results are usually obtained by completely preparing the soil and cultivating it for a few years after planting, farm owners should be aware of the possibility of starting hundreds of young walnuts in their wood lots and elsewhere at the expense of only a little labor. This will be a good step in the process of securing useful and money-making trees on parts of the farm which would perhaps otherwise be waste land, making no return at all to its owner for its cost in care and taxes. Further information in regard to methods of storing and planting the nuts and caring for the wood lot can be obtained from the state foresters of the various States or from the Forest Service, Department of Agriculture, at Washington.

# CANADIAN DEPARTMENT

BY ELLWOOD WILSON

PRESIDENT, CANADIAN SOCIETY OF FOREST ENGINEERS

THE first regular meeting of the Woodlands Section of the Canadian Pulp and Paper Association was held in the Windsor Hotel, Montreal. The morning session was taken up by the address of the President, Gerrard Power, a report by Dr. Howe, of the University of Toronto, on the results of his summer's work on cut-over pulp wood lands and an introductory talk designed to start discussion on the most pressing problems which confront those in charge of woods operations. The discussion which followed was most interesting and the spirit of co-operation manifested was most encouraging. Such topics as the use of machinery for felling and other woods operations: slash burning; the use of hardwoods for pulp and other products; log rules and scaling; labor and the respective merits of jobbers or company camps were discussed. It was felt and said that too long the woods operations had been carried on by rule-of-thumb, antiquated methods and that the time had come to bring this most important industry up to date and even a little beyond. A scheme was discussed for having a central co-operative bureau which could try out new logging machinery and implements, study such questions as slash burning, planting vs. natural regeneration, the utilization and transport of hardwoods, etc. After a joint luncheon, the afternoon session was spent in a discussion of the prospective Government food regulations for lumber camps and in ways and means to bring into practical being some of the points discussed at the morning session. A resolution was passed asking the Commission of Conservation to continue its studies and sample plots on cut-over and burnt forest lands and offering to contribute toward the work. A committee was also appointed to make a study of the logging industry and to try and devise practical means for cheapening operations and improving the condition in which cut-over lands are left. This committee consists of Messrs. Dalton, Grogan, Kenney, Kane and Ellwood Wilson. Mr. Clyde Leavitt was one of the guests of the meeting and gave a very interesting address.

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The special Fire Protection instruction car which is going the rounds of the Eastern Provinces under the auspices of the Canadian Forestry Association, is meeting with the most pronounced success. Mr. Black, the secretary, who planned this work deserves the greatest credit for the idea and for the way in which it has been carried out.

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The interest at present being taken in the use of small tractors, particularly those of the "caterpillar" variety, for handling logs is really remarkable. Many large and small firms in eastern Canada have purchased them and they have given excellent satisfaction during the past summer. Their performance during the winter in intense cold and over the deep snow will be watched with great interest.

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The Laurentide Company has laid out a number of experimental plots where experimental plantings of a great variety have been and will be made and it is hoped that the Commission of Conservation will place a trained observer permanently in charge of them. Spruce of several varieties has been planted on different soils and underplanted under different light and cover conditions, experiments with fertilizers are being tried, some new seedbed experiments have been laid out, a large peat swamp has been drained and different methods of treating and planting it will be tried. It has been noticed in the draining of this swamp that black spruce growing on it for a long time at an average rate of about three inches in height per year, commenced to grow at the rate of a foot per year after the water level was lowered.

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Mr. E. H. Finlayson, Supervisor for the Dominion Forestry Branch in Alberta, publishes a typewritten magazine for distribution among the men in his District and those who have gone over seas. Its motto is "Our only rival is our last issue." It is a splendid example of what an intimate local journal can do to keep men together and build up an *esprit de corps* and Mr. Finlayson deserves much credit for the labor and time he spends on it. The men at the front certainly appreciate news items about their old work and localities.

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R. H. Campbell, Director of the Dominion Forest Service, while on a trip of inspection in the west and traveling on a power speeder on the Hudson Bay Railroad at night, ran into a fire-ranger on a foot velocipede who was said to be traveling without a light. Mr. Campbell was thrown off and his skull fractured. He was taken to the Hospital at La Pas and specialists rushed there from Winnepeg. At last accounts his condition was hopeful. Mr. Campbell was indefatigable in visiting the remotest corners of his bailiwick and it is hoped that he may soon be able to take up his work.

## NEW BRUNSWICK FOREST SERVICE IS INAUGURATED

THE formation of the New Brunswick Forest Service was recently announced by the Minister of Lands and Mines, Hon. E. A. Smith. The supervision of the Inspectors and Rangers will be carried out by a Provincial Forester and Fire Inspector, a Chief Provincial Scaler and a Chief Provincial Game Warden.

The Province, divided into 36 districts, will be under the supervision of 5 inspectors. Forest Rangers are elected by competitive examinations.

The Rangers and Inspectors were obliged to attend both written and oral practical examinations in logging, scaling, cruising, fire protection and game protection, also ability to prepare reports.

The Examining Board appointed by the Advisory Committee consisted of R. A. McFadgen, Fredericton, Chief Scaler of the New Brunswick Railway Company, which owns over a million acres of Crown Granted Forest Lands; Mr. J. W. Vanderbeck, an experienced timber cruiser, logger and woodsman of Millerton, New Brunswick, with the Provincial Forester as Chairman of the Board.

Over two hundred applications were received for Permanent Forest Ranger positions; 139 were examined, and of this number 63 passed the examinations. The large number that did not qualify was due to the fact that many of the applicants presented themselves for examination who did not have sufficient previous experience in scaling, and as the scaling is one of the most important duties of a ranger, the Examining Board did not qualify any who could not qualify on the scaling part of the examination.

The names of those who qualified in their order of merit was then submitted by the Examining Board to the Advisory Commission, which made the selection absolutely by merit without reference to politics or religion.

Up to the present, 30 members of the Permanent staff have been selected and given their commissions. Their appointments will not be made permanent until after a probationary period of satisfactory service for six months from the date of their appointment.

The Forest Act which made possible the selection of the Rangers and Scalers by competitive examination is considered one of the most advanced steps of legislation that has been passed in Canada in recent years.

The development of the Forest Service in New Brunswick will be watched with interest by all those who are interested in Forest Conservation and Forest Fire Protection.

The new service is determined to protect the forests from fire and although it does not desire to prosecute anyone it will see that the laws are enforced.

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A resident of Nashwaak appeared before the magistrate at Fredericton on September 17th to answer to a charge of having set a fire without the necessary fire permit on the 26th of August. As it was a very dry windy day, this fire would have done very serious damage to the surrounding forest if twenty-five men had not gathered quickly to extinguish it. The surrounding residents are much aroused over the carelessness of their neighbor, which might have been the cause of very serious results.

A similar case was heard in Anderson, Restigouche County, on the same date, against a settler who, after being personally warned, set fire to his slash without a permit on another dry windy day, the 22nd of August, and this fire was not extinguished until after five hundred dollars damage was done.

In both cases the offenders pleaded guilty and were fined $20 and costs.

There is little excuse for this neglect, as the law was thoroughly published in both sections. The maximum penalty for setting a fire in the closed season, April 15th to October 15th, without a fire permit, is two hundred dollars and costs.

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An unusual announcement to come from the Department of Crown Lands for the Province of New Brunswick and one also of unusual interest, not only to lumbermen, but to the people generally, was made under the signature of the Minister of Lands and Mines. This announcement advertises the fact that the lands located in different sections of the Province which were advertised in the Royal Gazette to be sold on the 5th of September under the lease plan as authorized by Legislation of 1913, will now be put up to competitive bidding on the basis of straight stumpage rate per thousand superficial feet, the upset price of which will be announced at the hour of the sale. So far as these lands are concerned at any rate, this is a decided change of policy from that which has been followed by the Crown Land Department since the days when Honorable A. G. Blair was Premier. There are many hundreds of thousands, probably millions of acres of private lands in the Province, the lumber of which is cut upon the business basis which the present Minister of Lands and Mines is at least determined to experiment upon, as evidenced by the terms and conditions of the announcement he is now making to the public. It will, of course, be seen in a very short time, whether the departure from the mileage method is to the advantage of the Province or not, and the explanation of the postponement of the sale advertised for September 5th can be found in the present sale announcement of the Minister of Lands and Mines.

The lands, the lumber of which is now being offered for sale, did not come within the bonus arrangements of 1913, and not being under lease after the first of August, 1918, the Government of today is entitled to deal with them as they see fit.

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*Lieut. F. Bruce Robertson* has been reported killed in action. He enlisted three years ago and went over with a draft which reinforced the Princess Patricias. He was killed September 9th, his 26th birthday. He was a graduate of the Faculty of Forestry at Toronto, in the class of 1914. Up to the time of his enlistment he was employed by the Dominion Forestry Branch, at Albert, Saskatchewan.

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*Lieut. H. R. Christie* was formerly a member of the head office staff in the British Columbia Forest Branch, in charge of the office of Operation. He enlisted in one of the field companies of civil engineers and has seen about three years service in France. He has just returned to Canada after having received the Military Cross and having been slightly wounded. He is to join the Canadian Expedition to Siberia. He is one of Dr. Fernow's graduates.

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*Lieut. Wm. Kilby* of the Royal Air Force is now completing his course of training in Canada for pilot. He was formerly fire inspector for the Canadian Northern Railway, and secured a commission with one of the battalions of Highlanders, being afterwards transferred to the Royal Air Force, where he had experience in France as an observer.

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## BLACK WALNUT BEING ROUNDED UP

A NATION-WIDE canvas for black walnut is now going on. From Maine to California they are searching the back lots in every village, hamlet and town for the big walnut trees that have long been thought of little use except for shade purposes.

This sudden activity is in response to urgent requests on the part of the War Department for black walnut timber from which to manufacture gun stocks for the United States Army. The fact that there are few, if any, commercial growths of this timber, makes the task before the Government most difficult.

Added to this, it is now stated that Germany had been quietly, but certainly picking up black walnut timber in this country for years, and shipping it to her own munition factories, with the result that German army rifles are mostly built from American walnut.

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## WOOD FUEL A FARM PRODUCT

FARMERS are asked again to help out in the fuel shortage by producing more wood. The scarcity of labor makes this a serious problem, but the prices of wood are such that considerable sacrifice can be made to get wood. The Fuel Administration announces that many important industries will be short of coal. Wood

will, therefore, be used industrially on a larger scale than ever before. Many manufacturing concerns in Massachusetts used wood mixed with soft coal last winter. Although the use of wood increases the expense, it is far preferable to closing down an essential industry.

From the farmers' standpoint this market is a desirable one, as 4-foot wood is used. The domestic requirements for wood will undoubtedly also be greater than ever. For this purpose wood in short lengths is required, and can most economically be produced with the use of a power mill. In many communities municipal wood yards were established last winter. The farmers brought their wood into these yards in log lengths, and sold it to the municipality. It was sawed by a municipal machine and sold at cost. In this way the farmers were guaranteed a market for their wood, and were relieved of the burden of sawing or investing in the necessary machinery. There should be an extension of this idea during the coming winter as a means of saving labor.

### HOW THE FOREST SERVICE HELPS IN WAR

THE Forest Service of the United States Department of Agriculture is mobilizing the country's forest resources for war by helping the War and Navy departments and munitions manufacturers get the kinds and quantities of wood needed for rifles, airplanes, wheels and other specialties; finding out what kinds and grades of wood are suitable for war-time's special requirements; training inspectors of wood materials; improving timber specifications; and investigating and testing material, processes, and products used in manufacture of war supplies derived in whole or in part from wood. It is also stimulating the production of meat, wool, and hides on National Forest ranges; co-operating with stockmen to lower losses from poisonous plants; aiding the Fuel Administration to increase fuel supplies through use of wood; and is teaching the conservation of natural resources. It has helped recruit two regiments of forest engineers for service abroad, and is now contributing in the recruiting of the third and it contributed more than 375 members to the colors.

### TEACHING ITALIAN WAR CRIPPLES WOODCRAFT

WOOD-WORKING establishments are being erected at various points back of the Italian lines for the express purpose of teaching Italian war cripples wood-carving, box-making, and other industries requiring the use of timber, says a dispatch from Rome.

It is said that many of the Italian soldiers show themselves as adepts in the wood-working art, and it is the purpose of the Italian Government to encourage these propensities as much as possible and at the same time assure the establishment of an industry which will be of direct benefit to the entire population.

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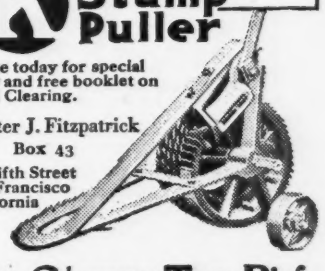

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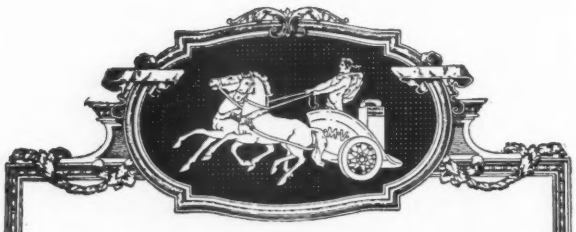

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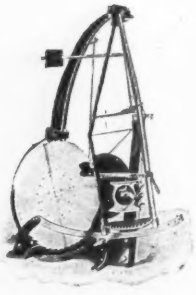

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¶ The Sawmill, rough sawing into the strips and boards:—The Dry-kilns, removing all moisture; the "SUPER SMOOTHING" Cylinder-knives of the planing machine, which make a surface like glass, literally scraping off the roughness; all perform their duty in placing before the builder, ready for use and painting or oil-treatment or enameling "THE WOOD OF A THOUSAND USES."

**OUR 9 BIG PLANTS "TURN OUT" 225,000,000 FEET YEARLY.**

¶ From the choicest stands of short and long leaf timber of the SOUTH—enough lumber to build 150 ships or construct and finish 10,000 residences.

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THE message that the American people stand as one behind our brave boys and gallant Allies, is the most cheerful "Merry Christmas" we can send them.

Let us make this a Red Cross Christmas—let us see to it that every member of every family joins the Red Cross. She is warming thousands, feeding thousands, healing thousands from her store—the Greatest Mother in The World.

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**RED CROSS CHRISTMAS ROLL CALL**

**December 16—23**

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THE AMERICAN FORESTRY ASSOCIATION

# The American Forestry Association

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## Declaration of Principles and Policy of The American Forestry Association

**IT IS A VOLUNTARY** organization for the inculcation and spread of a forest policy on a scale adequate for our economic needs, and any person is eligible for membership.

**IT IS INDEPENDENT,** has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.

**IT ASSERTS THAT** forestry means the propagation and care of forests for the production of timber as a crop; protection of watersheds; utilization of non-agricultural soil; use of forests for public recreation.

**IT DECLARES THAT FORESTRY** is of immense importance to the people; that the census of 1913 shows our forests annually supply over one and a quarter billion dollars' worth of products; employ 735,000 people; pay $367,000,000 in wages; cover 550,000,000 acres unsuited for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

**IT RECOGNIZES THAT** forestry is an industry limited by economic conditions; that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

**IT WILL DEVOTE** its influence and educational facilities to the development of public thought and knowledge along these practical lines.

### It Will Support These Policies

National and State Forests under Federal and State Ownership, administration and management respectively; adequate appropriations for their care and management; Federal co-operation with the States, especially in forest fire protection.

State Activity by acquirement of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organization, with liberal appropriations for these purposes.

Forest Fire Protection by Federal, State and fire protective agencies, and its encouragement and extension, individually and by co-operation, without adequate fire protection all other measures for forest crop production will fail.

Forest Planting by Federal and State governments and long-lived corporations and acquirement of waste lands for this purpose; and also planting by private owners, where profitable, and encouragement of natural, regeneration.

Forest Taxation Reforms removing unjust burdens from owners of growing timber.

Closer Utilization in logging and manufacturing without loss to owners; aid the lumberman in achieving this.

Cutting of Mature Timber where and as the domestic market demands it, except on areas maintained for park or scenic purposes, and compensation of forest owners for loss suffered through protection of watersheds, or on behalf of any public interest.

Equal Protection to the lumber industry and to public interests in legislation affecting private timberland operations, recognizing that lumbering is as legitimate and necessary as the forests themselves.

Classification by experts of lands best suited for farming and those best suited for forestry; and liberal national and State appropriations for this work.

ATTENTION OF THE MEMBERS OF THE AMERICAN FORESTRY ASSOCIATION IS DIRECTED TO THE PUBLICATIONS OF THE NATIONAL WAR GARDEN COMMISSION.

TO ITS BOOKS AND PAMPHLETS ON WAR VEGETABLE GARDENING THERE HAS BEEN ADDED A NEW SERIES OF PUBLICATIONS ON HOME CANNING AND HOME DRYING. ONE OF THESE SHOWS HOW HOME CANNING AND HOME DRYING WILL HELP WIN THE WAR. THE OTHERS SHOW HOW THESE THINGS CAN BE DONE IN EVERY HOUSEHOLD.

BY REASON OF CLOSE AFFILIATION, THROUGH ITS CONSERVATION DEPARTMENT, THE AMERICAN FORESTRY ASSOCIATION HAS DIRECT INTEREST IN THE SUCCESSFUL WORK NOW BEING CONDUCTED ON AN INTERNATIONAL SCALE BY THE NATIONAL WAR GARDEN COMMISSION. MEMBERS ARE URGED TO SEE THAT THEIR FRIENDS ARE SUPPLIED WITH SUCH OF THE COMMISSION'S FREE PUBLICATIONS AS CAN BE PUT TO GOOD USE.

## Partial List of Publications

¶ War Vegetable Gardening and the Home Storage of Vegetables, 32 pp.

¶ Home Canning and Drying—with instructions for making jellies and fruit butters, and for fermentation, salting and pickling, 32 pp.

¶ Vital Value of the War Garden, 8 pp.

¶ War Gardening by Communities and Neighborhoods.

¶ Canning and the War.

¶ Community and Neighborhood Canning and Drying.

Copies will be Sent upon Request

The National War Garden Commission
Washington, D.C.

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